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MINING, MINERAL AND GEOLOGICAL LAW

A TREATISE ON THE LAW OF THE UNITED STATES

Involving Geology, Mineralogy and Allied Sciences as applied in Mining, Real Estate, Public Land, United States Customs and other Litigation

Also the Acquisition and Maintenance of Mining Rights in the Public Domain and Obtaining Patents for Mineral Land under the United States Mining Laws

BY

CHARLES H. SHAMEL, M.S., LL.B., A.M., PH.D.

of the Illinois and Michigan bars

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PREFACE

THE aim and scope of this book and the importance of a knowledge of mining law to the mining engineer and mine owner in the United States are explained in the introductory chapter, but a few words may be added here concerning existing books that might be used for such purposes. The excellent works of Lindley and Snyder, each in two large volumes, on account of their elaborateness and style of treatment, are not well adapted for the use of others than practicing lawyers, although indispensable to them. The small manuals of mining law and forms are usually too brief to give any adequate space for such statement and explanation of the principles of our complicated system of mining law as will enable it to be understood in any appreciable degree by those for whom they are intended. Moreover, owing to the extensive changes in and additions to the State statutes by the various legislatures in 1907, and the revision of the very important Land Office Rules and Regulations made in the same year, they are no longer safe guides in these respects.

Consequently it would seem that a book containing in one volume a brief history of the development and a condensed but systematic exposition of the principles and rules of law that govern mining rights in the United States, together with a compilation of the National and State statutes and the Land Office Rules and Regulations relating thereto, revised to date, ought to be useful to the mining profession, and that the present is a particularly opportune time for its appearance. In the complex and intricate questions that have arisen out of the application of the extralateral provision of the law, a bare statement of the rule, worked out by the courts to govern rights in the various situations that arise in mining operations, would be inadequate to give a comprehension of the law. Consequently this, the most important division of the mining law, is discussed with considerable fulness, and citations and diagrams from the leading cases are given, which, I believe, will render the rules plain and their

applications readily understood. Where doubt exists, by reason of conflicting decisions or otherwise, this is frankly stated, for it is better to be doubtful than mistaken. The law-writer does not make the law, but only correlates the legal rules scattered through the decisions, and where these are in conflict or vague, the best he can do is to state the uncertainty plainly.

Although necessarily less elaborate in treatment than the two-volume treatises on mining law already mentioned, I venture to hope that the present work may be of some assistance to the members of the legal profession over and above so much of the above mentioned features as may be used by them. It is the only treatise written from the double standpoint of science and law. Barringer and Adams's book, now out of print, contains a chapter or two on geology, but this is very elementary and does not treat ore deposits, the part of the science of most interest to the mining lawyer. The scientific and legal portions were evidently each written by one of the joint authors, and neither has any perceptible influence on the other. Snyder states in his preface that as originally prepared his work contained a "geological preface," but this was not published.

While the scientific matter is necessarily very condensed, I hope that it will be of real assistance to mining lawyers by furnishing to such as lack a scientific education, an outline that will enable them to find the scientific authorities on the particular subject involved in his suit. The lists of books on various topics given in the bibliography are not intended to be exhaustive, but at the same time contain many more than perhaps any one would care to buy or read. Consequently I would suggest, to such of my legal brethren as feel themselves deficient in geology and allied sciences, that if they will get the following books (more fully described in the Appendix) and give them some study leisure hours, they may become very well equipped to han litigation involving geology, etc., and expose the pseu experts who sometimes on the witness stand manage to impress the jur and at the same time cloak their own ignorance by a prof flow of misused technical terms: general geology, Ch and Salisbury's Geology; ore deposits, Kemp's two volumes, — metallic and non-metallic; stratigraphy and paleontology, Grabau's Principles of Stratigraphy and Grabau and Shimer's North American Index Fossils; petrology, Kemp's Hand-book of Rocks;

mineralogy, Moses and Parsons' Mineralogy. Petrology, especially of the igneous rocks, is the most difficult to master without laboratory facilities, but the Handbook of Rocks will do all that can be done without the petrographic microscope. As Professor Pack remarks in the explanation to his instructive table in the Appendix, the important rock-making minerals are surprisingly few, and a small number of hours spent at some university laboratory or with some educated engineer, who has a petrographic microscope, will give enough knowledge of these few minerals and the combinations thereof that make up the different classes of igneous rocks, so that the literature of the subject can be read understandingly, and the testimony of experts comprehended. The periodical, *Economic Geology* (described in Appendix), is also well worth regular perusal by every mining lawyer as well as every mining man, for it supplements the text-books by the latest discoveries and discussions in mining geology, mineralogy, etc., from the pens of the leading American writers on these topics.

It is customary and proper in a preface to make acknowledgment to those who have rendered aid in the preparation of the book. In the present instance, owing to the widely diverse fields touched, such persons are very numerous, but none the less worthy of thanks.

First among these it is a great pleasure to mention Professor James F. Kemp, the head of the geological department of Columbia University. He has read the manuscript and to his advice and assistance are largely due whatever merits, especially in the scientific portions, the book may possess. I gladly join the great throng of students who have attended his lectures in their universal appreciation of his sound and wide scientific knowledge, as well as of his winning personality which retains in an extraordinary manner the attachment of his old students scattered throughout the mining camps of the world. I am likewise under many similar obligations to Dr. Amadeus W. Grabau, professor of paleontology in Columbia. His great enthusiasm and capacity for scientific work are an inspiration to all who come in contact with him. The completion of his Principles of Stratigraphy and his North American Index Fossils will place the mining profession under obligations for invaluable information not otherwise available. My thanks are also due to Dr. Charles P. Berkey, assistant professor of geology, and Mr. Thomas C. Brown, A.M., assistant

in paleontology, for valuable assistance and advice on the bibliography and otherwise.

I am heavily indebted to Dr. Henry S. Munroe, senior professor of mining, for valuable general counsel, and much kind assistance on the bibliography. I am also under many obligations to Professor Robert Peele, E.M., and Mr. E. L. Kurtz, E.M., assistant, of the mining department of Columbia. I also owe much to Professor Bradley Stoughton of the department of metallurgy of Columbia, for invaluable help on the bibliography as well as other favors.

Especial thanks are due and hereby tendered to George W. Kirchwey, Esq., Dean of the Department of Law of Columbia, and Kent Professor of Law, who granted enough of the valuable time of a very busy man to read much of the manuscript and gave valuable suggestions embodied herein. I am likewise under obligations to Professors George F. Canfield and Francis M. Burdick of the law faculty for suggestions and help. Among others of the faculty of Columbia to whom my thanks are due for assistance in different details, are Professor Wm. Hallock, Dean of the Department of Pure Science; Professor Alfred J. Moses, and Adjunct Professor Lea McI. Luquer of the Department of Mineralogy; Professor Edmund H. Miller, Assistant Professor Henry C. Sherman, Dr. C. H. Joüet, and Mr. E. J. Hall of the Department of Chemistry; Dr. Wm. A. Campbell, Adjunct Professor of Metallurgy, and Dr. J. H. Canfield, Librarian.

Among many other persons to whom my thanks are due for information and assistance on different points, I can only mention the following: Hon. John B. Clayberg of Butte, Mont., whose lectures on mining law I had the benefit of attending at the University of Michigan; Prof. Fred. J. Pack of the University of Utah, who, in addition to other favors, has kindly allowed the use of his excellent and ingenious table of igneous rocks; Dr. Douglas W. Johnson of Harvard University, for interesting instances of the use of geology in the law, Mr. Ralph H. Wilkin, Librarian of the Supreme Court Library at Springfield, Ills., for [illegible]h courteous assistance while working in said library; likewise for information to Mr. C. Will Shaffer, Librarian State Law Library, Olympia, Washington; Mr. William H. Holden, Librarian Chicago Law Institute; Mr. C. W. Anderson, Librarian, and Mr. F. L. D. Goodrich, Assistant Reference Librarian of the John Crerar Library,

Chicago, Ills. Also to the following officers of the mining States, for information kindly furnished as to their State statutes, etc.: Gov. Coe I. Crawford of South Dakota; Lew W. Collins, Assistant Secretary of Arizona; C. F. Curry, Secretary of State of California; T. J. Dalzell, Commissioner of Mines of Colorado; Robert N. Bell, State Mine Inspector of Idaho; William Walsh, State Mine Inspector of Montana; J. W. Raynolds, Secretary of New Mexico; W. G. Douglas, Secretary of State of Nevada; F. W. Benson, Secretary of State of Oregon; Charles S. Tingley, Secretary of State of Utah, and Wm. R. Schnitiger, Secretary of State of Wyoming. I am also under great obligations to the officers of the United States Geological Survey, who have generously allowed the use herein of numerous illustrations from official publications, and have always responded promptly and courteously to repeated requests for information. The same is true of the officers of the General Land Office.

The direct obligations to Lindley, Snyder, Morrison and other writers on mining law are acknowledged in the foot-notes at the proper places, but, of course, the indirect indebtedness is still greater. Although I am unable to agree with his views on the extralateral provision of the mining law, still I fully acknowledge the value of the writings of Dr. Rossiter H. Raymond, the learned Secretary of the American Institute of Mining Engineers, in the "Transactions" of the Institute, the *Engineering and Mining Journal*, etc., and I endorse Mr. Lindley's eulogy of the Doctor in the preface to his great work on Mining Law.

I hope that the members of both the legal and the mining professions will give me the benefit, for use in future editions, of information concerning any instances of other uses or additional examples of the application of geology and allied science in the law, that may come to their notice, as well as any suggestions, rections, etc., that may occur to any of them; at the address ven below from which a letter will always reach me.

To the kind consideration of the members of these two great ofessions, this book is respectfully submitted.

CHARLES H. SHAMEL,

Columbia University, New York City.

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[1] In order to avoid needless repetition, detailed contents of the State and Territorial statutes will not be given here but will be given in the index under the name of each State or Territory.

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ABBREVIATIONS

The ordinary abbreviations for the States are so familiar that they are not repeated here. When these are used in a citation of a legal decision, they stand for the reports of the decisions of the supreme court or other highest court of such State. The abbreviations are given for the reports of special courts found in a few states.[1]

A. & E. Encyclopedia — American and English Encyclopedia of Law.
A. I. M. E. — American Institute of Mining Engineers, Proceedings.
Am. Dec. — American Decisions.
Am. Neg. Rep. — American Negligence Reports.
Amer. Reports — American Reports.
Am. St. — American State Reports.
Atl. — Atlantic Reporter.
Beasley — Beasley's New Jersey Reports.
Bush — Bush's Reports (Ky.).
Blatchford — Blatchford's United States Circuit Court Reports.
C. — Chapter.
C. C. A. — Reports of Circuit Court of Appeals (U. S.)
C. C. A. N. Y. — Reports of U. S. Circuit Court of Appeals for New York.
Casey — Casey's Reports (Pennsylvania).
Common Bench (N. S.) — Reports of the Court of Common Bench, New Series (English).
Ct. Cl. — Court of Claims.
Cush. — Cushing's Reports (Mass.).
Cyc. — Cyclopedia of Law and Procedure.
East — East's Reports (English).
Fed. — Federal Reports.
Fed. Cas. — Federal Cases.
G. M. Co. — Gold Mining Company.
H. L. C. — House of Lords Cases.
How. — Howell's Reports (U. S. Supreme Court).
Ills. App. — Reports of the Illinois Appellate Court.
L. D. — Land Decisions (Published by U. S. Dept. of Interior).
L. R. — Law Reports (English).
L. R. — Appeal Cases. — Law Reports, Appeal Cases to English House of Lords.
L. R. — Ch. Div. — Law Reports of the Chancery Division.
L. R. — Ct. Exch. — Law Reports of the Court of Exchequer (English).
L. R. 10 Ex. — Law Reports 10 Exchequer.

[1] The page numbers of the legal citations are usually those on which the decision cited commences. Where a number in parenthesis follows the page number in a citation, such parenthetical number is the particular page among those covered by such decision, on which the point referred to is to be found.

L. R. A. — Lawyers' Reports Annotated.
L. R. H. L. — Law Report, Appeal Cases.
La. Ann. — Louisiana Annual Reports.
Leg. Gaz. — Legal Gazette.
M. Co. — Mining Company.
M. & M. Co. — Mining and Milling Company.
M. & W. — Muson & Welsby's Reports (English).
Maul & S. — Maule & Selwyn's English Kings' Bench Reports.
McCrary — McCrary's Reports (U. S. Federal Courts).
Mo. App. — Reports of the Missouri Appellate Court.
Morr. M. Rep. — Morrison's Mining Reports.
N. E. — Northeastern Reporter.
N. J. Eq. or N. J. Equity — New Jersey Equity Reports.
N. J. L. — New Jersey Law Reports.
N. Y. Supp. — New York Supplementary Reports.
O. Decis. — Ohio Decisions.
O. St. — Ohio State Reports.
p. — page.
pp. — pages.
Pa. St. or Penn. St. — Pennsylvania State Reports.
Pa. Super. Ct. — Reports of the Pennsylvania Superior Court.
Pac. or Pacif. — Pacific Reporter.
Pet. or Peters — Peters' Reports (U. S. Supreme Court).
Phila. — Philadelphia Reports.
Pittsb. — Pittsburg Reports.
Plowden — Plowden's Reports (English).
R. S. — Revised Statutes of the United States (1872).
S. or sec. — section.
Saw. or Sawyer — Sawyer's Reports (U. S. Federal Reports).
S. E. — Southeastern Reporter.
S. L. — Session Laws.
P. F. Smith. — P. F. Smith's reports (Pennsylvania).
Stew. — Stewart's Reports (New Jersey).
Stockton — Stockton's New Jersey Reports.
S. W. — The Southwestern Reporter.
T. D. — Treasury Decisions (Published by U. S. Treasury Dept.).
Tex. Civ. App. — Reports of Texas Court of Civil Appeals.
Upper Canada Q. B. — Reports of the Court of Queen's Bench for Upper Canada.
U. S. — Reports of the United States Supreme Court.
U. S. G. S. — United States Geological Survey.
v. or vol. — volume.
v. or *vs.* — versus.
W. & M. — William and Mary (English Statutes).
Wall. or Wallace — Wallace's Reports (U. S. Supreme Court).
Watts — Watts' Reports (N. J.)
Wheat. — Wheaton's Reports (U. S. Supreme Court).
Wright — Wright's Reports (Pennsylvania).

MINING, MINERAL, AND GEOLOGICAL LAW

I

Introduction: Importance of knowledge of law to the miner and mining engineer; scope of this treatise; sources of American law relating to mining; territorial application of these laws.

THE enormous growth of the law and its literature, resulting from the extraordinary industrial and social development of the past century, has necessarily caused a differentiation of the law into numerous subdivisions, each applying legal principles and statutes to particular industries or interests. Some of these are directly concerned with the use of certain sciences in practical jurisprudence, so that we have treatises on medical jurisprudence, legal chemistry, the law of electricity, the law of engineering and architecture, and even on "dental jurisprudence" and law of literature.

To an even greater degree is this specialization true of the law relating to mining, because the ownership of very valuable property may turn upon its interpretation, and because in the United States titles may be based upon the structural features of the ore in its relation to the inclosing rock. It therefore follows that in the extensive litigation that has accompanied the great industry of mining, frequent appeals have been made to geology; and the evidence of geologists and engineers has been the deciding factor in cases involving millions of dollars.

Such legal use of geology has been particularly frequent in the United States, owing to the fact that in the Federal statutes that are the basis of the larger part of our mining law certain geological conceptions are involved in defining mining rights; so that expert geologists, petrographers, and mining engineers have frequently been called upon to assist the courts in mining litigation, just as medical, chemical, electrical, mechanical, and architectural experts have been employed in other litigation.

The importance of a knowledge by the mining engineer and

geologist of the law relating to his calling was so forcibly stated in a paper read by James D. Hague at the meeting of the Mining Engineering Section of the International Congress of Arts and Sciences in connection with the World's Fair at St. Louis in 1904 that I cannot better impress this idea than by reproducing some paragraphs therefrom. Being the result of the experiences of a prominent geologist and mining engineer, it should be convincing to any one who may be doubtful as to the practical benefits of such law to the scientist and the mine operator.[1]

"The fully qualified mining engineer and mining geologist who has to deal with mines and mining properties of the public domain, owned and worked under the grants and terms of the laws of the United States, must be more than a theoretical or practical geologist: he must be learned in the *law*. If the mining engineer be called upon to consider the value of mining property, the title to which is derived from the grant of a mineral patent of the United States, issued under the law of 1866, or that of 1872, or if he have to do with the mining of veins or lodes which are worked in the exercise of the rights granted by such patents, he must thoroughly know and duly appreciate the bearing and practical effect of all the essential and technical provisions of that law, relating either to the original grant of the surface ground or affecting the exercise of extralateral rights derived therefrom; and he will surely be liable to disastrous error if he fails to give due consideration to all the legally prescribed as well as the physical conditions of his problem."

But it is not alone in the United States that a knowledge of mining law is desirable and even necessary to the mining engineer. A recent English book on mining[1a] contains the following:

"Questions of law, as affecting title and restrictions on freedom of working, though usually subjected in addition to proper legal advice, can often be looked into only by the engineer on the ground. This does not necessitate a course of law studies; but it does frequently need practical acquaintance with the general application of mining laws. . . ."

In the United States, owing to the complications arising from the fact that a given mining enterprise may at one and the same time be affected by different laws belonging to three different legal systems, as explained later, the importance of a knowledge of mining law to the American mining engineer is much greater than to his colleagues in any other country.

I shall attempt, therefore, an exposition of the American law

[1] Reprinted in *Engineering and Mining Journal*, vol. lxxviii, p. 627.

[1a] Mining and Mining Investments, p. 84; A. Moil (1904).

involving mining, minerals, and geology, keeping especially in view the needs of the following two classes interested therein:

(1) Mine managers, mining engineers and geologists, who should know the rules of the law which apply to the physical features of their properties and operations. They may thus derive assistance in litigation in which they are or may become involved, and may avoid, as far as possible, the disastrous litigation which has too frequently harassed the mining industry. Their efforts will be more successful if they understand the law of the various geological features of their properties. "Forewarned is forearmed" here as elsewhere.

(2) Mining lawyers and mine owners who can more efficiently conduct actual litigation or prepare for threatened litigation if they have at hand a statement of the results of geological investigation and the law that has been evolved in relation thereto.

The mutual assistance of geology and law, particularly in mining litigation, has been frequently acknowledged by the courts. In a Montana case [2] the court says:

"This instruction, as we have just quoted it, was that submitted. The court, in giving it, struck out the portion which is in italics. Appellants complain of error in striking out that portion. We think in this case the court was correct. The question was a geological one, — that is, whether the Stoner vein, in its downward course, connected with the Niagara, — and the court instructed how such connection would be made; that is, by following a continuous streak or body of quartz or ore, or by passing through vein matter, as defined in the instructions. This was a question of geology and of facts in nature. It would have left it to the jury entirely too indefinitely to have told them that they could find a continuous body of ore by following such indications as a practical miner would follow with the expectation of finding ore. We do not think that this is the method by which geological facts can be established."

One of the leading authorities in discussing what is perhaps the most important subject in mining litigation — that of extralateral rights under the statute of 1872 — says: [3]

"Manifestly, the application of the law to individual cases requires the consideration of physical conditions existing in each. Where a patented surface area is invaded, the patentee need but produce the instrument under which he deraigns title from the paramount proprietor to put the invader upon proof of justification: but where, in pursuit of his vein on its downward

[2] *Fitzgerald* vs. *Clark*, 17 Mont. 100 (136).

[3] Lindley on Mines, Sec. 581.

course, out of and beyond vertical planes drawn downward through his surface boundaries, his right is challenged, he is called upon to show something more than appears upon the face of the patent, and establish facts, the existence of which are not, even *prima facie*, presumed from that instrument. Naturally, therefore, the discussion leads us into geological questions, sometimes simple, at other times complex."

But it is not only in mining that geology aids the courts. In his paper on the "Relation of the Law to Underground Waters,"[3a] Dr. D. W. Johnson says:

"A very important reason for the unsatisfactory condition of the law relating to underground waters is to be found in the fact that the state of our knowledge regarding such waters is now in advance of the general ruling of the courts on some of the questions involved. The earlier legal decisions and authoritative opinions were made at a time when very little was known regarding what was beneath the surface. The fundamental conception upon which many of the opinions rest is that we are ignorant of the conditions controlling waters hidden from our view. Since that time the progress of geological science has wrested from the unknown many things regarding underground waters, and firmly established them in the realms of known fact. . . .

There yet remains much that is uncertain regarding subterranean conditions; but as, in the past, geology has added much to our store of knowledge concerning these conditions, so in the future we may confidently expect a continued increase in the known facts. And with this increase in knowledge we should look toward an increasingly satisfactory adjustment of those controversies which arise concerning subterranean waters."

On the other hand, substantial encouragement has been given by law to the study of geology, particularly in those jurisdictions where there has been occasion to use this science in litigation. This is gracefully acknowledged in the dedication of a book on "The Ore Deposits of Various Countries," by Rudolph Keck (Denver, 1892), which reads as follows: "To the honorable judges of the courts and the attorneys at the bar of the courts of the State of Colorado, who have by their own good examples given such an impetus to the study of ore deposits of our State."

My intention is to include all those subjects that relate to geologic features — those that concern topics on which geologists and mining engineers may be called upon to give expert testimony — and those that concern the physical conditions of mining as contradistinguished from the law that affects mining in common

[3a] United States Geol. Surv., Water-supply and Irrigation Paper, No. 122, (1905).

with other industrial undertakings, or mines as property in common with other species of real estate. Regarded as real estate, mining property is subject to the general rules of real estate law in the construction of contracts, conveyances, etc., and these need not be considered here; but when the technical terms of geology are used in the law to define legal rights, the courts will call on experts for evidence as to the meaning of the words and the identification of the natural objects involved in the legal contest.

The various features and the meaning of the rather vague provisions of the national mining laws have caused the mining profession much anxiety, and have evoked much discussion — some amiable, some otherwise — by the members thereof, as is evidenced by the various articles that have appeared from time to time in the *Transactions* of the American Institute of Mining Engineers, the *Engineering and Mining Journal*, and other publications. It must be admitted that for many years after the enactment by Congress of National mining legislation that great uncertainty necessarily existed as to numerous points which arose in disputes between mine owners but which were not specifically provided for by said statutes. The litigation necessary to settle these doubtful points was tedious and expensive; so that, to this extent, there is justification for the objurgations that certain writers have heaped upon the law during this period. However, nearly all of these uncertainties have now been cleared up by the decisions of the Supreme Court of the United States, or of subordinate courts; and it is now possible to state definitely the law on practically every complication liable to arise in mining operations.

I do not hope or wish to make every geologist or mining man "his own lawyer"; but my belief is that such a treatise as the present one will often help to avoid that particularly fierce litigation which so often brings undeserved disaster on meritorious mining enterprises, and also to point out the instances where prompt legal assertion of rights may forestall the schemes of the sharks that infest many rich mining districts. Neither do I expect or desire to furnish all the scientific knowledge that would equip an attorney to act as a geological expert. I believe, however, that a brief outline of the accepted principles of modern geology, and especially the latest results of the study of ore deposits (which

has only very recently attained a respectable scientific certainty), will be of assistance to the lawyer who may have charge of mining or other litigation involving geological features. Although such an outline of the science of geology as can be given herein must necessarily be confined to such parts thereof as have been or are likely to be invoked in litigation — and the treatment of even these can only be a mere sketch — still this and the various notes together with the bibliographies contained in the Appendix furnish the means by which, whenever the necessity arises, the lawyer can find in the text-books of geology, in the Government publications on this subject, and in the scientific articles in periodical literature, such information as to geological details as may be needed in his case, in the same way as he gets the details of the law of his case from the treatises and reports.

On the theory of ore deposits and similar principles that may be directly involved in litigation, the important original articles in scientific literature and the Government reports are cited in the same way as leading cases in the law are cited in support of a legal proposition. Beyond this, it would be impossible within the limits of this work to furnish a digest of the great mass of geological literature which has accumulated during a century of scientific investigation in the reports of the geological surveys of the various States, in the numerous publications of the United States Geological Survey, in the "proceedings" and "transactions" of scientific societies and associations, and in scientific periodicals; for this would require a number of volumes comparable to the great law digests. Fortunately, however, there are already in existence certain text-books, which by their full references to original papers and articles, together with some good indexes to Government and periodical literature on geology, render available for practical purposes of litigation all important geological literature. These are fully described in the bibliography given in the Appendix.

Of course, the larger part of geologic law is applied in mining litigation; but there are a number of interesting and sometimes important application of geological principles in other cases, such as concerning the establishment of ancient or obliterated boundaries, in cases arising under the United States land laws and the United States customs laws, and even one curious case in which the decision as to who was the owner of the article in dis-

pute turned upon one of the fundamental conceptions of geology as to the constitution of the universe.[4]

Sources of American Law Relating to Mining, etc.

In order that those readers who have not had a legal education may comprehend the diverse origins and applications of the American law on our subject, it seems desirable to give a brief statement of the different sources from which such law is derived, and the peculiar territorial divisions of the United States with respect to the applications of such mining and other law as is hereinafter discussed.

As the sources of the American law in general, and therefore, of American mining law, we have: (1) Such principles of the common law of England as are considered by the courts to be applicable to political and social conditions in America. This is one of the two great legal systems that have developed in the history of civilization (the other being the Roman Civil Law); and it furnishes a number of fundamental principles of frequent application in mining and similar litigation. We have also (2) the laws enacted by the legislative bodies of the various States and Territories. Lastly (3), and for our purposes most important, we have the laws and statutes enacted by Congress concerning mining and mineral rights in land which originally belonged to the National Government. In all of the above instances the details — the great mass of the law — are only to be found in the decisions of the higher courts of the individual States or the courts of the United States as the case may be. These either define and apply the "unwritten" rules of the common law, or interpret or apply to the infinite variety of cases that arise in litigation the general provisions of the statutes, either State or National.

Territorial Divisions of the United States with Reference to the Kind of Mining Law in Force Therein

But these laws are not of uniform force or applicability, throughout the whole of the United States; they vary as follows:

I. The Thirteen Original States and, in addition, the States of Vermont, Kentucky, Maine, and West Virginia, which were

[4] See p. 34 *et seq.*

carved out of territory originally forming part of some of the Original States. Tennessee and Texas are also included in this class. In this group of States the National Government did not at any time have any property rights in the land.[5] Consequently, in these States, the United States laws regarding mining have no application; for, as we shall see later, the Federal mining laws only apply where the National Government originally owned the land. Such cases as arise therein are decided according to (1) the principles of the common law or (2) the statutes enacted by the respective State legislatures.

II. In the States of Arkansas, Illinois, Indiana, Iowa, Missouri, Michigan, and Wisconsin the land originally all belonged to the Government, and the mineral lands therein containing metals were ordered to be reserved from sale. Those containing lead and copper were ordered sold, and in some cases leased, under special laws enacted prior to the mining legislation that finally resulted from the discovery of the precious metals in California and Nevada. Practically all of the remaining land in this group of States was disposed of as agricultural land before any national mining legislation, and so was not subject thereto.[5a] In addition, by laws enacted by Congress, at different times Alabama, Michigan, Wisconsin, Minnesota, Missouri, and Kansas were expressly excepted from the operation of Federal mining laws. The same result was reached in the case of Oklahoma by declaring all the land agricultural. In this group of States the common law and State legislation are, as in the case of the first group, the chief sources of law, with perhaps a few traces from Federal legislation on mining matters.

III. All the remaining territory of the United States in which, being acquired at different times by the National Government, the nation was the paramount proprietor of the mineral lands so that the laws governing the same are chiefly derived from Federal legislation, although common law, State legislation, and even local customs, are sources of some of the provisions of mining

[5] Strictly speaking, this is not correct with reference to Tennessee the land of which was originally public domain. After deducting what was necessary to fulfil the obligations to North Carolina, according to the terms of its deeds of cession, the remainder of the public land was donated to the State of Tennessee.

[5a] This is only partially true of Arkansas in which considerable mineral land in the mountainous western portion of the State belongs to the National Government and is subject to National mining legislation.

law. This group comprises Arkansas, the Dakotas, and all the Rocky Mountain and Pacific States and Territories.[6]

The provisions of the Federal mining laws were extended to the district of Alaska by the Acts of May 17, 1884, and June 6, 1900. Under an act of Congress passed July 1, 1902, and amended February 5, 1905, provision was made for the location of the mining claims in the Philippine Islands, "Upon land containing veins or lodes of quartz or other rock in place, bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposits"; and by another section provision is made for "entering" coal land, and in still another section for the sale of saline lands. In Porto Rico, according to information furnished by its governor, it is considered that the old Spanish mining laws have been repealed by various codes adopted since the American occupation, and that there is now no special mining law. Under section 357 of the Civil Code adopted in 1902, the owner of the surface is held to be the owner of everything beneath it. Mines on lands belonging to the Insular Government are exploited under a concession. During the Spanish occupation mining concessions and rights were acquired in the same mannner as in Mexico and Cuba. Any rights then acquired and maintained still exist; but "mining in Porto Rico is a feeble industry."

[6] Public land in Mississippi, Louisiana, and Florida is also subject to location as mining claims since July 4, 1876. See 31 L. D., 135 for a history of the legislation resulting thus.

II

Geology and its Subdivisions and Allied Sciences; definition of a Mineral; of Mine, Quarry, etc.

MINING law is related in an especially intimate manner to the sciences of geology and mineralogy. Mining is carried on for the sake of the minerals, that are found in the earth's crust and that are desired by man for any reason. The concentration of such minerals into deposits or masses of sufficient richness to justify extraction, from their original state of wide dissemination in minute proportions in the substance of the earth's crust is the result of the action of agencies which together with accompanying phenomena and with the methods of formation of the associated strata are subject-matter belonging to the science of geology.

This justifies the definition of these and allied sciences and their subdivisions, largely for the purpose of an introduction to a bibliography of the best and latest books and articles thereon that are liable to be needed at any time in litigation for preparation on special scientific principles or facts that may have a decisive bearing on the decision of a case, involving heavy financial interests. A striking example of this is found in the late case of *Grand Mammoth Co.* vs. *Central Co.*, fully explained in a later part of this book.[1]

Geology and its Subdivisions and Allied Sciences

Geology is one of the broadest and most fundamental of the sciences, making use of the results of many of the others. Perhaps as good a definition of it as can be formulated is as follows:

Geology is the science that treats of the structure of the earth; of the various stages of development through which it has passed, and which have led to its present condition; of the extraordinary succession of living beings that have existed upon it, and of the

[1] See p. 179 *et seq.*

agencies and processes whose action has accomplished the changes.

Such a comprehensive science has naturally developed special aspects or subdivisions, the following being those usually recognized:

Cosmic or astronomic geology, which treats of the relation of the earth to the universe in general and to the solar system in particular — the external relations of the earth.

Geognosy, which treats of the matter constituting the earth and its arrangement. As subdivisions of geognosy we have:

(a) *Mineralogy* which treats of minerals — the chemical combinations in which the elements constituting the earth's crust are found in nature.

(b) *Petrology*, which treats of rocks — *i.e.*, the aggregates of different composition and structure in which the minerals are found in the accessible part of the earth's crust.

Structural or geotectonic geology, which treats of the structural arrangement of the earth's material — the "architecture of the earth."

Physiographic geology, which treats of the surface features and changes of the same — the topography of the earth's surface.

Paleontology, which is concerned with the fossils or remains and traces of plant and animal life found in the rocks.

Historical geology, which attempts to give an account of the succession of events through which the earth's surface has passed.

Stratigraphic geology, which is a study of the succession of the beds of rock laid down during the progress of the geologic ages. This succession is worked out in part by the aid of the science of paleontology.

Dynamic geology, which discusses the causes, agencies, and processes that have operated or are operating on the earth.

Economic geology, which deals with the applications of the science of geology in industrial relations and operations.

Mining geology, which is a subdivision of economic geology concerned with the application of geologic facts and principles to mining.

If the terms, medical jurisprudence, dental jurisprudence, legal chemistry, law of literature, etc., are justifiable, then it seems that it is also justifiable to use the term, —

Legal geology, which deals with the application in litigation of the facts and principles of geology, particularly its subdivisions, mineralogy, economic geology, and mining geology.

Legal geology is the subject-matter of this treatise in the same way that certain applications of medical facts and principles in litigation form the subject-matter of the various treatises on medical jurisprudence; but, in order that the title of the book shall adequately represent its contents to the average man who will probably have occasion to use the same, I have, instead of entitling it "Legal Geology," used the phrase "Mining, Mineral, and Geological Law." This gives adequate prominence to the subdivisions of geology that have given rise to by far the larger part of the law relating to subjects included in geology when this word is used in its widest sense.

Any further attempt even to outline the subject of general geology in this book would be unadvisable, for the space that could be allotted would be so limited that it would be useless for any practical purpose. It has seemed to me much the better plan to give in a bibliography (see Appendix) the titles, together with a brief description and appraisal, of the many excellent books, both on general geology and on its several subdivisions that are in print, so that any person searching for any variety of geologic information may know in what book or other publication it is to be found. On two of the topics of economic geology, ore deposits and veins, which are so intimately related to the legal use of geology, I have ventured to give a brief outline of the present state of the science: first, because of their direct and exceedingly important application in American mining laws; and, second, because as yet most of the literature on these subjects is only to be found in the "proceedings" of scientific associations or in the files of special periodicals usually inaccessible to the general reader.

Among the other sciences sometimes involved in mining litigation mention should be made of:

Analytical chemistry, which treats of the methods of determining the elements and their combinations and the amounts thereof present in any substance.

The determination of the amounts of the precious metals present in an ore is usually termed

Assaying, which is also, but less accurately, applied to the

determination of the amounts of lead, tin, zinc, and copper in their ores. Assaying is carried out in two ways:

(1) *Fire assays*, in which by treatment of the ore in a furnace the metal is obtained in the form of a small globule or "button," which is weighed on a delicate balance. This method is chiefly used for the estimation of gold and silver.

(2) *Wet assays*, in which the ore is dissolved by acids or other reagents and the metals are precipitated therefrom as chemical compounds, which are either dried and weighed, or the amount of metal is determined directly in the solution by titration, called the "volumetric" method. The latter process is described in books on analytical chemistry. It must always be remembered that while the methods of analytical chemistry are very accurate and, when carried out by competent men, the results are entirely trustworthy, the amounts of ore or other substance that can be treated and the metal actually separated and weighed are relatively very minute, usually only the fraction of an ounce. Consequently, in order that the metal may be present in the very small sample that is analyzed or assayed in exactly the same proportion that it exists in carload lots of ore, or in an ore-body exposed in a shaft, drift, stope or other mine opening, the utmost care in sampling must be exercised, otherwise the most accurate analytical results will be worthless. It is as important to have the sampling accurately and properly done as it is that the chemist or assayer understand his profession.[2]

[2] A practical method of assaying or testing ore in the field for silver and gold is a matter of much interest to prospectors and engineers; for usually the appearance of an ore, not only does not give any clue to its richness, but does not even tell whether it contains the precious metals at all.

The best methods that have been proposed for this purpose are the following:

1. The ore (after roasting over an open fire, if a sulphide) is crushed and triturated in an iron mortar with mercury; the mercury collected by panning and driven off by heat. The gold and silver remaining may be weighed on a small pocket balance. A. I. M. E., vol. xxv, p. 645; vol. xxvi, p. 187.

2. A bead of the metal is obtained by scorification and cupellation by the blowpipe. This is measured by a microscope provided with an eyepiece micrometer, and the weight obtained by a table from the observed diameter. Luther Wagoner, A. I. M. E., vol. xxxi, p. 798; J. S. Curtis, Annual Report U. S. Geological Survey, 6th.

3. A bead is obtained by the blowpipe as in method No. 2, and its diameter measured, either by means of the Plattner ivory scale or by the Richards aluminum scale, and the weight obtained from a table of diameters. J. W. Richards, Jour. Am. Chem. Soc., vol. xxiii, p. 203.

The objection to the first method is the weight of the necessary apparatus and the inaccuracy of the results, owing to the fact that amalgamation with mercury will not extract all the gold and silver.

The writer has tested methods 2 and 3 in the assay laboratory of the Columbia School of Mines

Scientific Definition of a Mineral

From the scientific standpoint, a mineral may be defined as an inorganic, homogeneous substance of a definite or approximately definite chemical composition found in nature and having certain distinguishing physical characteristics. If formed under

Fig. 1. — Example of igneous rock in thin section as seen through a petrographic microscope; porphyritic andesite from Goldfield, Nevada, showing phenocrysts of plagioclase feldspar with remarkable zonal growth, distributed through a finer grained ground mass. Magnified 30 diameters.

From micro-photograph by C. H. Shamel.

suitable conditions, it also has a definite molecular structure which is exhibited externally in its crystalline form and internally in its cleavage, its behavior with respect to light, etc. It also

and finds that both give good results. Measurement by the microscope gives results agreeing very closely with those obtained by weighing the beads on the best assay balances. The Richards aluminum scale is much superior to the old Plattner scale. The results obtained by the former, while not so extremely accurate as by the microscope, are all that can be asked for testing ores in the field.

Of course none of these methods can replace the regular fire assay for the accurate determination of the gold and silver contents of large ore-bodies or mine samples; but they are nevertheless very useful in field work for the testing and approximate assay of gold and silver ores. The best book on quantitative assaying with the blowpipe is Fletcher's, mentioned in the Bibliography.

possesses certain other properties such as specific gravity, hardness, fracture, tenacity, luster, color, fusibility, etc. All of these or only some of them may belong to a mineral which is amorphous, that is, not crystallized. The behavior of minerals toward polarized light is the foundation of the modern science of petrology. Thin sections of rock are ground, and when examined by a polarizing microscope, all the minerals that go to make up the rock can be identified, thus furnishing the basis for the accurate

FIG. 2. — Example of igneous rock in thin section as seen through a petrographic microscope; quartz diorite from Schwartzenburg, Germany, showing plagioclase feldspar, quartz, hornblende and magnetite. Magnified 30 diameters.

From micro-photograph by C. H. Shamel.

classification and identification of rocks. This is particularly valuable in the case of the igneous and metamorphic rocks and of the mixtures of minerals that form the contents of veins or make up ore-bodies. These questions of the identity of rocks or mineral bodies often become of the utmost practical importance in litigation, particularly that concerning extralateral rights, as well as invaluable guides in prospecting and the development of mines.

The science of petrology, as based on the microscopic miner-

alogy of rocks, is of comparatively recent development. Ferdinand Zirkel, professor in the University of Leipzig and one of the most distinguished petrographers of his day, in 1876, made an examination and report on the rocks of the Fortieth Parallel Survey by this method, which was published by the United States Government. The microscope was also used in the identification of the various formations in question in the noted Eureka case [3] and in the litigation in British Columbia over the War Eagle and Le Roy claims at Rossland, where Mr. Lindgren of the United States Geological Survey made microscopic examinations for the purpose of identifying the ore-bodies, etc. It has also been applied in litigation in Utah and elsewhere.

The methods of identification and the classification of rocks developed by the microscopic study of the minerals that compose them cannot even be outlined here; but in the Bibliography (see Appendix) the authorities are given from which a knowledge of the subject may be gained by any one interested. At the present time the instrument has a continually widening use in all investigations relating to ore deposits, etc., as will be seen upon an examination of modern treatises on economic geology and of the invaluable publications of the United States Geological Survey on the mining districts of the United States.

The latest extension of the use of the microscope in economic geology is its application to the study of opaque mineral masses, which include most of the metallic minerals of ore deposits. Instead of grinding thin sections as with ordinary rocks, which are more or less transparent, when in sufficiently thin sections, highly polished surfaces of the opaque minerals are prepared and etched with acids, etc., following the methods of metallography.

An examination of these etched surfaces by an ordinary petrographic or a special metallographic microscope reveals characteristic appearances of different opaque minerals that are impossible to differentiate otherwise; it also gives a clue to the order or succession in which the different minerals were deposited which go to make up an ore. This may be of great practical importance in litigation where questions of identity of ore-bodies, continuity of veins, etc., arise, as well as a guide to mining development.[4]

[3] See A. I. M. E., vol. vi, p. 36. See also *Prof. Pock's Rock Table* in Appendix.

[4] This important method of mineral investigation has been worked out by Dr. William Campbell, of Columbia University. See *Economic Geology*, i, 751, and School of Mines Quar., July, 1906,

The legal definition of a mineral under the different conditions under which the word is used in legal documents, etc., demands so much space for adequate treatment that its consideration is deferred to chapter iv which is devoted to that subject. Before passing to the definition of mines, quarries, etc., however, a few miscellaneous legal definitions of some geological terms will be mentioned.

Legal Definitions of Fossil and Stone

So far as I have found, the word "fossil" has only been defined in one American case,[5] which is simply a repetition of the definition given in Webster's Dictionary:

> "Fossils are organic substances which have become penetrated by earthy or metallic particles, petrified forms of plants and minerals."

In the older English cases the word fossil is commonly used as a synonym for mineral or mineral substance, as in the following sentence: "The term 'minerals' here used, though more frequently applied to substances containing metals, in its proper sense includes all fossil bodies or matters dug out of mines."[6]

A stone is defined by the United States Supreme Court as: "Earthy or mineral matter condensed into a hard state.[7]

In an Illinois case,[8] it was proved that at that place among the inhabitants and builders and contractors "stone" meant limestone, therefore an ordinance would not be held void on account of being indefinite or uncertain because "stone" was used without specifying what kind of stone.

Definition of Mine, Quarry, etc.

The word *mine*, accurately used, refers in an industrial sense only to an excavation beneath the surface of the earth for the

in which the methods are described as well as some interesting results obtained by Dr. Campbell and Mr. C. W. Knight, by such an examination of the Temiskaming silver ores. The ordinary study and identification of minerals by means of crystallographic, chemical and blowpipe tests, etc., are fully described in the standard works on mineralogy, the names of a number of these being given in the Bibliography in the Appendix.

[5] *Doster* vs. *Zinc Co.*, 140 Pa. St., 147.

[6] *Earl of Rosse* vs. *Wainman*, 14 M. & W., 859 (871).

[7] *Jenkins* vs. *Johnson*, 9 Blatchford, 516 (519).

[8] *Shannon* vs. *Village of Hinsdale*, 180 Ill., 202 (204).

purpose of removing minerals therefrom for industrial uses. Mine: "a pit or excavation in the earth, from which metallic ores are taken by digging."[9] "Mine, when applied to coal, is equivalent to a worked vein; for by working the vein it becomes a mine."[10]

The word "mine" is sometimes extended to include the ores as well as the excavation; and this is not an improper use of the term. However, an occurrence or body of ore is not properly called a mine unless something has been done to develop it by actual mining operations, although it is sometimes used in this sense.[11]

In some States the statutes give definitions of what the word "mine," as used in such statutes, shall be understood to include. In Indiana the term "includes every shaft, stope, or drift which is used or has been used in the mining and moving of coal from and below the surface and ground."[12]

The term *quarry*, as commonly used, is applied to a place or working where minerals are taken from the earth by an excavation which is wholly open above.[13] The distinction from a mine being that the excavation in the latter is beneath the surface and under cover of the strata above. But in one case the Supreme Court of the United States has quoted, apparently with approval, Webster's definition, according to which the distinction between a mine and a quarry is that a mine is the place where *metallic ores or other mineral substances* are taken by digging, while a quarry is a pit from which *stone only* is taken.[14] Notwithstanding this approval by the United States Supreme Court, the most scientific and definite meaning of the word, both in industry and in law, is that given above.

The only legal definition of a *stope* is in a Missouri case,[15] in which the following is quoted from the Century Dictionary:

[9] *McCurtain* vs. *Grady*, 1 I. T., 107 (123); *Springside, etc., Co.* vs. *Grogan*, 53 Ill., App. 60 (65); *Marvel* vs. *Merrill*, 116 U. S., 11 (12); *Murray* vs. *Allred*, 100 Tenn., 100; *Coleman* vs. *Coleman*, 1 Pevis, 470 (Pa.).

[10] *Westmoreland, etc., Co., Appeal*, 85 Pa. State, 344; *Morr* vs. *Flemby*, etc., *Co.*, 2 Q. B, 599.

[11] Stretch, "Prospecting, Locating & Valuing Mines," 4th ed., pp. 16, 34; *Bullion, etc., Co.* vs. *Eureka Hill, etc., Co.*, 5 Utah 3, 11 Pac. 515.

[12] Horner's Rev. St. Ind., 1901, sec. 5458; see also P. & L. Digest laws of Pa., vol. for 1894, col. 3110, sec. 193.

[13] *Murray* vs. *Allred*, 100 Tenn., 100, 43 S. W., 355, 66 Am. St. Rep., 740, 39 L. R. A., 249; *Rutledge* vs. *Cress*, 17 Pa. Super. Ct., 490 (495).

[14] *Marvel* vs. *Merrill*, 116 U. S., 11.

[15] *Fisher* vs. *Central Lead Co.*, 156 Mo., 479.

"The excavation made in a mine to remove the ore which has been rendered accessible by the shaft or drift." The idea of a stope implies that the excavation is temporary and only kept open until the ore is removed, after which it is allowed to cave in or become filled with waste rock, etc., while shafts or drifts are permanent openings for passing to and from the place where mining is being done and for transporting the mineral.

A *shaft* is a vertical or inclined excavation from the surface for mining purposes. Its use is to give access to the mineral, for hoisting the same to the surface, ventilation, pumping water, etc.

A *winze* is a shaft which does not reach the surface, but passes from one level to another underground.

A *drift* is a nearly horizontal excavation extending from the shaft to the mineral. *Level* is an equivalent term.

An *adit* is a nearly horizontal excavation or drift running from the surface into the mountain, and used to drain away water or to give access to the mineral. In the United States, however, the word *tunnel* is used instead of adit, in most cases, although properly a tunnel means a nearly horizontal excavation through the mountain open at both ends, as a railroad tunnel.

III

Property in minerals; historical sketch of the ownership of minerals — under Roman law, in Spain, in England; regalian rights of the English crown; similar rights in British North America and in the United States; property in oil and natural gas, in broken minerals, in tailings, in minerals as affected by the statute of limitation, and in meteorites.

ALTHOUGH in the discussion of the legal definition of the word "mineral" that follows in chapter VI the question of ownership of the mineral is sometimes incidentally mentioned, this question with respect to mineral deposits in general, and to property rights in the surface, is of such importance that separate treatment is demanded.

Property in Minerals

Under the Roman law the general theory as to the ownership of minerals appears to have been that all beneath the surface belonged to the state by right of conquest; but it seems that there were exceptions to this general rule at various times in the history of the empire, and variations at the same time in the different provinces, where the general rule might be modified by allowing the retention of more or less of the original laws and customs of a conquered country. This theory as to the ownership of all minerals seems not to have been put into effect during the period when the civil law was in its greatest purity. At that time it was asserted only with reference to gold, silver, and other precious metals, while other metals, as well as minerals and quarries, belonged to the owner of the soil.

The civil law was the basis of the law systems of modern Europe, and is likewise the foundation of the law relating to the ownership of minerals that now prevails in these nations. During the early periods of European history two general theories of such ownership seemed to contend for supremacy, namely: (1) the

sovereign was regarded as absolute proprietor of all minerals and mines, and the only right that the landowner had was to an indemnity for damage done to the surface in searching for and mining such minerals; and (2) the landowner was admitted to be the owner of the minerals beneath the surface, but subject to the right of any third person to work such deposits, if he himself was unable or unwilling to do so.[1]

It will be, of course, impossible within the limits of this work to treat of the ownership of minerals in the different European countries; but we may make brief mention of the laws of Spain in this regard, as they are of particular interest, since they have not only furnished the foundation on which have been built the mining laws of Mexico, and of Central and South America, but they have also extended over California and the remainder of the territory gained from Mexico.[2] Also of similar laws of England, for these are the basis of a part of the mining law of the United States and Canada.

Spain.— In Spain the assertion of the rights of the king to property in all minerals was absolute. In 1383 Don Alonzo XI claimed them, as the following law or decree shows:

"All mines of silver and gold and lead, and of any other metal whatever, of whatsoever kind it may be, in our Royal Seigniory, shall belong to us; therefore, no one shall presume to work them without our special license and command; and also the salt springs, basins, and wells, which are for the making of salt, shall belong to us."[2]

England.— In England, during the early period of its history, the ownership of the minerals in the earth was a subject of continuous contention between the king and the owners of the soil. Usually the king, being the stronger party, prevailed whenever he or his favorites to whom he might have granted mineral rights cared to assert them. These pretensions, however, were subsequently abandoned as to all minerals except gold and silver, which were called the royal metals, and held to belong absolutely to the crown wherever they might be found.[3] This claim to the so-called royal metals is known in law as the "regalian" right of

[1] Arundel Rogers, "Law of Mines and Minerals," p. 9.

[2] Halleck, "Mining Laws of Mexico and Spain," p. 4.

[3] *Rex* vs. *Northumberland*, 1 Plowden, 310.

the crown, and prevails even to-day in theory, in the law of England.

Doubt arose in the case of the royal metals when these were found intermixed with base metals, as to whether, in such instance, the whole mixture belonged to the crown; but in the reign of Elizabeth it was so decided by a large majority of the judges.[4]

This decision, however, produced such an unfavorable effect on the industry of mining that in the reign of William and Mary, by statute [5] the sovereigns formally renounced such claims, and declared that "no mine of copper, tin, iron, or lead shall hereafter be adjudged, reputed or taken to be a royal mine, although gold or silver might be extracted out of the same." By a subsequent statute the crown is given the option of purchasing, at certain fixed prices per ton, all ores of copper, tin, or lead, except in Cornwall, when these contain gold or silver intermixed therewith; but there is no record that this right has ever been exercised.[6]

As there is no gold or silver in commercial quantities found in England, the regalian rights of the crown are of theoretical rather than practical importance. This theory, however, has accompanied the common law of England to all of those countries in which this law has been the basis of legal systems; and in some of these, as we shall see hereafter, it has been of some practical importance.

According to the common law, aside from the regalian rights of the crown just mentioned, the property of all minerals is *prima facie* in the owner of the fee [7]; but the right of the owner of the fee to work the minerals does not necessarily accrue unless he is in possession.

Canada. — The title to all the land, as well as all contained minerals, within the present Dominion of Canada was vested originally either in the King of France or in the English crown. As regards the part originally belonging to France, a grant of the land did not convey the right to the minerals without special words of conveyance regarding this right.

The common law of England, unless modified by statutes, is

[4] *Rex* vs. *Northumberland*, 1 Plowden, 310 (336).

[5] 1 W. & M., c., 30; 5 W. & M., c., 6.

[6] Rogers, "Law of Mines and Minerals," pp. 72 *et seq.*

[7] Co Litt., 4 b; 2 Bl. Com., 18; *Curtis* vs. *Duval*, 10 East, 273; *Barnes* vs. *Mawson*, 1 Maul & S., 84.

in force, however, in all the territories and provinces of Canada except Quebec, where the old French law is the basis of the legal system. By the theory of the common law in Canada, gold and silver mines belong to the crown in all land whatsoever, unless they have been expressly severed therefrom and granted by the crown.[8] By the British North American Act, under the provisions of which the Dominion of Canada came into existence, exclusive jurisdiction was given to the provinces to make laws in relation to the management and sale of public lands within the provinces. In general all the public lands within the different provinces had been granted by the crown to the provinces,[9] and this grant included the regalian right to gold and silver. The House of Lords has decided that in provinces such as British Columbia, which were not specifically mentioned in said act but were admitted afterwards, the assignment of the regalian right to gold and silver to the provinces took effect upon their joining the Dominion.[10] In the case of British Columbia, however, this was only a recognition of the rights which said province held in the lands, precious minerals, etc., previously.

The policy of the different provinces of Canada with regard to the grant or reservation of minerals, both precious and base, in public lands when these were sold, has not been uniform. Under the regalian principle of the common law, although not expressly reserved in the grant, the right to the precious mineral was reserved if no mention was made of it. In British Columbia the policy of late has been to reserve all minerals when public land is sold, together with right of entry for working it.

United States. — In the United States the common law of England is the foundation of the legal systems of the various States and of the United States so far as its principles have any application. This includes the principle of the common law by which the owner of the surface is presumed to be the owner of everything beneath to the center of the earth within vertical planes through his boundary lines. The exceptions hereinafter noted, however, are made by the provisions of the National mining laws.

[8] McPherson & Clark, "Law of Mines of Canada," p. 28.

[9] British North American Act of 1867, sec. 1094, Law Reps., 1867 (30–31 Vict.), ch. iii, p. 5.

[10] *Attorney-General of British Columbia* vs. *Attorney-General of Canada*, 14 Appeal Cases, 205 (304).

As to the regalian rights of the crown under the common law, there is some trace in the legal systems of a few of the States. In the case of *Shoemaker* vs. *The United States*, 147 U. S., 282, this question arose in connection with the District of Columbia and the rights to alleged gold and silver mines contained in land within the District, the precise question being whether the owners of certain lands condemned for use as a public park had any right to damages for the gold and silver supposed to be contained therein. The court states that by the grant of Charles I to Lord Baltimore all the mines of gold and silver, as well as gems and precious stones, were given to Lord Baltimore, subject to a royalty of one-fifth to the king. By the Revolution the right of the king to the royalty, and by the confiscation of the proprietary title in 1780 *all* the rights to the precious minerals, became vested in the State; by the act of cession by the State of Maryland all such rights became vested in the United States, and therefore the United States held the regalian rights to the precious metals in the District of Columbia, and the owners of the lands were not entitled to be allowed, in the assessment of damages, for the value of prospective gold mines in such tract. The opinion in this case contains an elaborate discussion of the interesting question of regalian rights in the precious minerals in the United States which should be consulted by any one interested in this topic.

In the State of New York it is declared by statute that all mines of gold and silver in any land and all mines of any metal in lands belonging to all persons not citizens of the United States, "are the property of the people of the State in their right of sovereignty." Also all mines of other metals in land owned by citizens of the United States the ore of which, on an average, shall contain less than two equal third parts in value of copper, tin, iron, and lead, or any of these metals.[11] This is essentially an assertion of regalian rights; and the statute contains provisions for obtaining the right to prospect and work precious metals, etc., in private lands, when the owner thereof refuses his consent. As there are no economic gold or silver deposits in the State of New York this statute is of theoretical rather than practical importance, although applications have been made for the right to prospect for supposed gold and silver deposits.

A similar regalian right is asserted in the State of Michigan,

[11] Rev. Stat. N. Y. (3d ed., p. 2834); Title, Public Land Laws, secs. 80, 81, 82.

where mines of gold and silver, or either of them, or of all other mines or minerals containing gold or silver in any proportion, are declared to be vested in the people of the State "in their right of sovereignty." But the next section provides that this right shall never be enforced against any citizen of the State in whom the fee of the soil containing any such mines of minerals is vested. Consequently this right is of very little importance, being only enforceable against an alien landowner; and there is no record of even a "foreigner" ever having been subjected to the provisions of the Act.

In Texas the public land all belonged to the State, and the original policy with reference to minerals was to reserve all "salt springs, gold or silver mines, copper or lead, or other minerals" (law of 1837); but by the constitution of 1866 this policy was renounced, and the State released to the owner of the land all mines and minerals of any kind, "subject to a uniform taxation."

In an early case in California [12] the question arose with reference to the regalian right of the State of California in the gold and silver contained in land within this State belonging to the United States Government, and the Supreme Court held:

"The mines of gold and silver on the public lands are as much the property of this State, by virtue of her sovereignty, as are similar mines in the lands of private citizens."

This ruling was followed in two subsequent cases.[13]

In the later case, however, of *Moore* vs. *Smaw*, etc., 17 Calif., 199, the Supreme Court of California squarely reverses itself and abandons its former position as to the ownership of the precious metals in lands belonging to the United States. The court reviews, in the decision, the regalian right as it belonged to the English crown and the reasoning by which the court in the case of *Bell* vs. *Hicks*, *supra*, had deduced therefrom the regalian rights of the sovereign State of California to the precious minerals in the land owned by the United States, and points out that these rights do not apply in California; and continues:

"It follows from the views we have thus expressed, that the first position advanced by the defendants cannot be sustained; that the gold and

[12] *Hicks* vs. *Bell*, 3 Calif., 219.

[13] *Stoakes* vs. *Barrett, etc., Co.*, 5 Calif., 37, and *Conger* vs. *Weaver*, 6 Calif., 548, 65 Am. Dec., 528.

silver which passed by cession from Mexico were not held by the United States in trust for the future state; that the ownership of them is not an incident of any right of sovereignty; that the minerals were held by the United States in the same manner as they held any other public property which they acquired from Mexico; and that their ownership over them was not lost, or in any respect impaired by the admission of California as a state."

This decision is now the law of California with reference to the ownership of the precious metals in lands belonging originally to the United States or which still belong to it. In both of these instances the ownership of the precious metals vested in the United States or its grantee. The case of *Moore* vs. *Smaw* does not overrule in express terms that part of *Hicks* vs. *Bell*, *supra*, which asserts regalian rights of the sovereignty of California in precious metals in the lands of private persons; but this has never been asserted, and if it has any vitality at all it is as an academic theory of the law rather than a practical rule of its application.

Although apparently not expressly passed upon in other States, it is not probable that, if the question ever arises, any regalian right to the precious metals would be recognized in any of them. In the precious-metal mining States, the United States being the original proprietor of the land, the rights of the metals therein are controlled by the terms of the grants made by the United States.

Property in Minerals under Highways, Streets, and Navigable Waters

The general rule as to an ordinary highway or road in the country is that the public has only an easement in the land for the purpose of passage, etc., and the title to the fee remains in the owner of the abutting land who has a right to mine to the middle of the highway the minerals under it, provided this is done so as not to obstruct or damage the highway.[13a]

There is a distinction in relation to rights to minerals, etc., under streets. If the rights of the public therein have been acquired by a common law dedication, as where the street was originally a country highway, or where, by reason of attempted but defective compliance with statutory provisions as to platting,

[13a] *Jackson* vs. *Hathaway*, 15 Johns, 447, 8 Am. Decis., 263. Elliott on Roads and Streets, sec. 690.

etc., the public acquired rights only amounting to a common law dedication, the right to the minerals remains in the abutting owner. But where a statute provides for the vesting of the fee of the streets in the city and the requirements of such statute have been substantially complied with, the decisions are not uniform as to the rights in the minerals under the streets. In Iowa,[13b] Kentucky [13c], and Illinois,[13d] it has been held that title to the streets vest in fee in the city by statutory provision or grant, and the abutting owner does not have any right to mineral under the streets.

On the other hand, the question has recently been before the Colorado Supreme Court in litigation by the city of Leadville claiming ownership of the rich mineral deposits under its streets. In one case [13e] the decision was against the city on the ground that the plat of the addition was not accepted by the City Council in the manner prescribed by statute, and therefore it only amounted to a common law dedication and consequently title to the minerals did not pass to the city.

In a subsequent case,[13f] however, the plat had been properly made, accepted, etc., and the direct question was considered as to the right to the mineral deposits beneath the streets under the Colorado statute which provides, "all avenues, streets, alleys, parks, and other places designated or described as for public use on the map or plat of any city or town, or of any addition made to such city or town, shall be deemed to be public property, and the fee thereof be vested in such city or town." It was held that under this statute the city had no right to the mineral deposits under its streets, but these still belonged to the original owners of the land. The Court draws a distinction between this statutory provision which vests the fee of the "streets" in the city and those which vest the fee of the "land," "ground," or "premises" donated for streets, etc., in the municipality.

Being a matter of statutes and statutory construction, no general rule can be laid down as to the title to minerals under streets, and in those jurisdictions in which the question has not

[13b] *City of Des Moines* vs. *Hall*, 24 Iowa, 234.

[13c] *Trustees of Hawesville* vs. *Hawes Heirs*, 6 Bush, 232.

[13d] *City of La Salle* vs. *Matthiessen, etc., Co.*, 16 Ills. App., 69; *Matthiessen, etc., Co.* vs. *City of La Salle*, 117 Ills., 411.

[13e] *City of Leadville* vs. *Coronado M. Co.*, 86 Pac., 1034.

[13f] *City of Leadville* vs. *Bohn M. Co.*, 86 Pac., 1038.

been passed upon by the courts of last resort the question must be regarded as unsettled.

The title to minerals under the sea and navigable rivers is in the sovereign. In the United States this means the State adjacent to the navigable water.[18g] This right has been asserted by statute in Florida with reference to the deposits of phosphates in the beds of navigable streams.[18h] In South Carolina it is held that phosphate deposits in salt marshes between high and low water mark do not belong to the adjacent riparian owner.[18i]

The rights to mineral deposit in the sea beach, etc., is treated in chapter XVIII.

Property in Oil and Natural Gas

The general rules of property in minerals in the United States have some special modifications in the instances of petroleum and natural gas, arising out of the peculiar physical nature of these substances. As we will see hereafter, they are uniformly held to be minerals and to come within the legal scope of this term. However, owing to their wandering, fugitive, and volatile nature, they do not become absolute property of the owner of the fee of the land in which they may be found, but only become property when they are reduced to possession. The leading case is that of *Ohio, etc., Co.* vs. *Indiana,* 177 U. S., 190. This and other cases arose originally in the State courts of Indiana upon a statute regulating the method of boring for and operating oil and gas wells. It was claimed that this statute conflicted with the constitution of the United States, and so the litigation was carried up to the United States Supreme Court, which in its decision says:

"No time need be spent in restating the general common-law rule that the ownership in fee of the surface of the earth carries with it the right to the minerals beneath, and the consequent privilege of mining to extract them. . . . The question here arising . . . is this: Does the peculiar character of the substances, oil and gas which are here involved, the manner in which they are held in their natural reservoirs, the method by which and the time when they may be reduced to actual possession or become the property of a particular person, cause them to be exceptions to the general principles applicable to other mineral deposits and hence subject them to different rules? True it is that oil and gas, like other minerals, are situated beneath

18g Gould on Waters, sec. 10; Farnham on Waters and Water Rights, vol. i, pp. 50 and 663.

18h *The State ex rel, etc.* vs. *Phosphate Coms.*, 31 Fla. r 558.

18i *State* vs. *Pinckney*, 22 S. C. 484.

the surface of the earth, but except for this one point of similarity, in many other respects they greatly differ. They have no fixed *situs* under a particular portion of the earth's surface within the area where they obtain. They have the power, as it were, of self-transmission. No one owner of the surface of the earth, within the area beneath which the gas and oil move, can exercise his right to extract from the common reservoir, in which the supply is held, without, to an extent, diminishing the source of supply as to which all other owners of the surface must exercise their rights. The waste by one owner, caused by a reckless enjoyment of his right of striking the reservoir, at once, therefore, operates upon the other surface owners. Besides, whilst oil and gas are different in character, yet they are one, because they are unitedly held in the place of deposit."

The court then proceeds to a detailed examination of all the cases which have arisen in the United States involving this question of the ownership of oil and gas, and after stating that the rule in Indiana is in substantial accordance with the general rule on this subject throughout the United States, states the rule in Indiana to be:

"Although in virtue of his proprietorship the owner of the surface may bore wells for the purpose of extracting natural gas and oil, until these substances are actually reduced by him to possession, he has no title whatever to them as owner. That is, he has the exclusive right on his own land to seek to acquire them, but they do not become his property until the effort has resulted in dominion and control by actual possession. It is also clear from the Indiana cases cited that, in the absence of regulation by law, every owner of the surface within a gas field may prosecute his efforts and may reduce to possession all or every part, if possible, of the deposits without violating the rights of the other surface owners. . . . On the other hand, as to gas and oil, the surface proprietors within the gas field all have the right to reduce to possession the gas and oil beneath. They could not be absolutely deprived of this right which belongs to them without a taking of private property. But there is a coequal right in them all to take from a common source of supply, the two substances which in the nature of things are united, though separate. It follows from the essence of their right and from the situation of the things, as to which it can be exerted, that the use by one of his power to seek to convert a part of the common fund to actual possession may result in an undue proportion being attributed to one of the possessors of the right, to the detriment of the others, or by waste by one or more, to the annihilation of the rights of the remainder. Hence it is that the legislative power, from the peculiar nature of the right and the objects upon which it is to be exerted can be manifested, for the purpose of protecting all the collective owners, by securing a just distribution, to arise from the enjoyment by them, of their privilege to reduce to possession, and to reach the like end by preventing waste. This necessarily implied legislative authority is borne out by the analogy suggested by things *ferœ naturæ*, which it is unquestioned

the legislature has authority to forbid all from taking, in order to protect them from undue destruction, so that the right of the common owners, the public, to reduce to possession may be ultimately efficaciously enjoyed."

A Kentucky case on this subject [14] brought to light one of the contemptible schemes by which monopolies seek to perpetuate their power of overcharge that amount to robbery. The Kentucky Heating Company had piped gas from a natural-gas field in Meade County, Ky., and was selling it in Louisville for heating and illumination. A monopoly in the guise of the Louisville Gas Company contested the right of the Heating Company to do this, claiming an exclusive right to sell gas in Louisville; but it was beaten in the courts. It then organized a fake company and leased land in the gas region, bored wells, built an alleged lampblack factory surrounded by a high board fence and proceeded to draw off and burn the gas in enormous quantities, with the plain object of destroying the rival company by exhausting its natural-gas supply of the region.

But the Kentucky court frustrated this scheme of the fake lampblack company and said:

"During the five months the factory was operated it manufactured about 300 lb. of lampblack, worth four cents a pound. In this time they burned all the gas they could obtain, the total amount being about 90,000,000 feet. No lampblack was shipped away from the factory. The gas was burned night and day, and it is evident from the proof that in a short time more the pressure upon the pipes of the Kentucky Heating Company would have been so low as to destroy its usefulness. Other facts might be stated, but the testimony of the defendants themselves, whose depositions were taken by the plaintiff, is sufficient to show that they conceived the idea of securing leases on territory connected with the gas reservoir from which the Kentucky Heating Company obtained its supply, and by boring numerous wells to draw off the gas and practically destroy the business of the Kentucky Heating Company. The organization as the Calor Oil and Gas Company and the establishment of the lampblack factory was a part of the plan to evade the statute against the wasting of natural gas and to waste the gas.

"It is earnestly maintained that the statute does not apply to the case, and that at common law there is no remedy. We cannot concur in this conclusion. Independently of the statute, the common law affords an ample remedy for a wrong like this. While natural gas is not subject to absolute ownership, the owner of the soil must, in dealing with it, use his own property, with due regard to the rights of his neighbor. He cannot be allowed deliberately to waste the supply for the purpose of injuring his neighbor. While

[14] *Louisville Gas Co.* vs. *Kentucky Heating Co.*, 77 S. W., 368.

a bad motive will not render that unlawful which is lawful (*Chambers* vs. *Baldwin*, 91 Ky., 121; 15 S. W., 57; 11 L. R. A., 545; 34 Am. St. Rep., 165), a man is only allowed to make a reasonable use of those natural supplies which are for the common benefit of all. The gas under the ground may go wherever it will, but the defendants cannot be allowed to draw off the gas from under the plaintiff's lands simply for the purpose of injuring it, for the plaintiff's lands are thus clandestinely sapped, and their value impaired. These principles have often been applied in the case of underground waters, and we see no reason why the same rule should not apply to natural gas. . . .

"The doctrine that an act which is legal itself, and violates no legal right, cannot be made actionable on account of the motive which induced it, has no application, because the acts of the defendants in wasting the gas violated the plaintiff's legal rights. Both the parties drew gas from the same reservoir. It was incumbent on each to exercise his right so as not to injure the other unnecessarily. If one wasted all the gas from the reservoir, there would be nothing left for the other. Every owner may bore for gas on his own ground, and may make a reasonable use of it; but he may not wantonly injure or destroy the reservoir common to him and his neighbor." [15]

These decisions comprise the law of the subject in the United States, which may be briefly restated thus: *Oil and gas when in the strata beneath the surface are a species of property held in common by the whole number of proprietors of the surface under which a given tract of oil- or gas-bearing strata is found; they are not the property of any one of these surface proprietors until they are reduced to possession; each surface proprietor has the exclusive right to seek for and reduce to possession, by boring or otherwise, the deposits of such substance that may be beneath his surface, but such right is subject to the authority of the State to regulate such taking in such manner as may be deemed wise and for the best interests of all of the common owners of the oil and gas;*[16] *under common law principles also, none of the common owners have the legal right to wantonly or maliciously draw off or waste oil or gas, although the wells by which this is attempted may be on their own land.*

[15] *Jones* vs. *Fount Oil Co.*, 194, Pa. St., 379; *Manf., etc., Co.* vs. *Ind., etc., Co.*, 155 Ind. 679 *Contra*, *Hague* vs. *Wheeler*, 157 Pa. St., 324.

[16] *Del Monte, etc., Co.* vs. *Last Chance, etc., Co.*, 171 U. S., 55 (60); *Brown* vs. *Spilman*, 155 U. S. 665 (669–670); *Brown* vs. *Vandergrift*, 80 Penn. St., 142 (147); *Westmoreland etc., Co.'s Appeal*, 25 Weekly Notes of Cases (Penn.), 103; *Westmoreland, etc., Co.* vs. *De Witte*, 130 Penn. St., 235; *Hague* vs. *Wheeler*, 157 Penn. St., 324; *Jones* vs. *Forest, etc., Co.*, 44 Atl. Rep., 1074; *State, etc., ex rel. Corwin* vs. *Indiana, etc., Co.*, 120 Indiana, 575; *Jamieson* vs. *Indiana, etc., Co.*, 128 Indiana, 555; *State* vs. *Indiana, etc., Co.*, 120 Indiana, 575; *Geer* vs. *Conn.*, 161 U. S., 519; *Lanyon Zinc Co.* vs. *Freeman*, 68 Kan., 691, 75 Kan., 995.

Property in Broken Minerals, Tailings, etc.

After a mineral has been broken or severed from the vein or deposit, it is no longer real estate, but personal property and subject to the rules of law respecting personal property.[17] This is true, even if the mineral is not removed from the mine, but lies at the breasts, having been broken down from the working face.

If tailings from a stamp mill or other ore-dressing establishment or mine are abandoned by the owner and allowed to flow down the stream or are deposited on land belonging to other persons, they become the property of the owner of the land on which they may be deposited.[18] If they accumulate on vacant or unappropriated land they may be appropriated by the first comer under the provisions of the Placer Act. Perhaps this last statement should be qualified, because the courts, in reality, have not gone farther than to say in relation to such a case:

"Although not a mining claim within the strict meaning of the expression as generally used in this country, still it is so closely analogous to it that the propriety of subjecting the acquisition and maintenance of the possession of it to the rules governing the acquisition of the right of possession to a strictly mining claim at once suggests itself.

"The only value attached to the land results from the precious metals that may be obtained from it. What is the difference how these metals may have been deposited there, so far as a case of this kind is concerned? It is distributed through a certain stratum of earth, which must be dug up and put through a certain milling process, as in the case of any ordinary metalliferous earth. If the land be valuable only for the metal which it may contain, and it is claimed by neither party for any other purpose, the acquisition of title to it should manifestly be governed by the rules ordinarily controlling the acquisition of title or the right of possession to mining claims. We do not pretend to hold the land here in question to be mineral land, but only that it is so clearly analogous thereto that the laws controlling the possession of one should also govern the other." [19]

Although in the above case the court does not go farther than to hold that such land with the deposit of tailings thereon could be held by right of possession *analogous* to the statutory provisions of the mining law, there does not seem to be any good reason

[17] *Crouch* vs. *Smith*, 1 Md. Ch., 401; *Riley* vs. *Boston Water Power Co.*, 11 Cush. (Mass.), 11; *Lykens Valley, etc., Co.* vs. *Dock*, 62 Pa. St., 232.

[18] *Jones* vs. *Jackson*, 9 Calif., 237; *Rogers* vs. *Cooney*, 7 Nevada, 212

[19] *Rogers* vs. *Cooney*, 7 Nev., 212 (vols. v, vi, and vii, combined, 873).

why unoccupied public land on which tailings have been deposited and abandoned by the owner should not be subject to location as a placer claim under the provisions of the statute. The nature of the deposits are identical; both are formed by deposition from water; and the fact that the sedimentary matter was added by the operations of man in the one instance and by the operation of natural forces in the other would not seem to be sufficient to make any difference in the legal status of the deposit resulting therefrom.

Title to Unmined Minerals by the Statute of Limitation

The adverse possession of real property for different periods, ranging from 5 to 20 years according to the State and the circumstances of the case, gives a title to such real property by virtue of the statute of limitation. The question becomes important whether this rule applies where the title to minerals has been severed from the surface title and the minerals are allowed to lie unworked in the earth.

In Massachusetts mineral rights will not be lost by 40 years non-user of the same when the surface owner did not exercise any adverse enjoyment of the mineral rights themselves.[20] Also in Pennsylvania it was held that the surface owner cannot acquire any right to reserves of unworked minerals by the statute of limitation[21]; but if the surface owner take possession adversely by working or otherwise of the minerals beneath his land the statute of limitation will run in his favor. The question does not appear to have arisen in any other State except South Carolina; and the rule of Massachusetts and Pennsylvania, that possession of the surface for more than the period of the statute of limitation will not give the surface proprietor the right to the minerals beneath, the title of which had been severed from the surface ownership, may be taken as the law on this subject.

In the case of *McBee* vs. *Loftis*, 1 Strob. Eq., 90 (S. C.), it is intimated that a right of mining gold would be lost by a non-user of 20 years. It does not explicitly appear in the opinion whether

[20] *Arnold* vs. *Stevens*, 41 Mass., 106, 35 Am. Dec., 305.

[21] *Armstrong* vs. *Caldwell*, 53 Pa. St. (3 F. P. Smith), 284; *Caldwell* vs. *Copeland*, 37 Pa. St. (1 Wright), 427, 78 Am. Dec., 436; *Plummer* vs. *Hillside, etc., Co.*, 160 Pa. St., 483, 28 Atl. 853; *Algonquin, etc., Co.* vs. *Northern, etc., Co.*, 162 Pa. St., 114, 29 Atl., 402; *Lulay et al.* vs. *Barnes*, 172 Pa St., 331, 34 Atl., 52.

this was a placer mine or not; but it is stated that the owner being present at the workings on one occasion said to the manager that he "expected complainant had or would give him up the land to plant corn on," so that it was probably a placer, and surface possession decided the matter.

A related question is whether the statute of limitation for bringing actions of trespass to real property applies where the trespass is committed under ground in the course of mining operations. On the surface, the fact of the trespass is open to observation, and the statute runs from the date of the commission of the act. But under ground the trespass is concealed; and the general rule is, that the statute of limitation does not begin to run until the discovery of the trespass or until the time when the same might have been discovered by reasonable diligence.[22]

In Montana, Ohio, and Utah there are statutory provisions on the subject which, of course, control in these States.

Property in Meteorites

The ownership of meteorites, the bodies of mineral, usually metallic iron, which fall from the sky upon the surface of the earth, is one of special interest because it involves a direct legal construction of the theory of the constitution of the universe as expounded in the planetesemal hypothesis, the nebular hypothesis, etc. The first case of this kind of which there is a record in the United States is that of *Goddard* vs. *Winchell*, 86 Iowa, 71, 52 N. W., 1124, in which the dispute was to whether the owner of the land was also the owner of a meteorite which fell on his land, or whether it belonged to a third party who had seen it fall and dug it up and sold it to Winchell. This third party dug it up from a depth of three feet below the surface, where it had imbedded itself by the force of the fall. Goddard, the owner of the land, replevied it from Winchell, and the case went up to the Supreme Court of the State, which says in its decision of the case:

"The subject of the dispute is an aerolite, of about 66 pounds' weight, that 'fell from the heavens' on the land of the plaintiff, and was found three feet below the surface. It came to its position in the earth through natural

[22] *Lewey* vs. *H. C. Fricke Coke Co.*, 166 Penn. State, 536, 31 Atl., 261, 45 Am. St. Rep., 684; *Gotshall* vs. *Langdon*, 16 Pa. Super. Ct. Rep., 158; *Boyd* vs. *Blankman*, 29 Calif., 19, 87 Am. Dec., 146.

causes. It was one of nature's deposits, with nothing in its material composition to make it foreign or unnatural to the soil. It was not a movable thing 'on the earth.' It was in the earth, and in a very significant sense immovable; that is, it was only movable as parts of the earth are made movable by the hand of man. Except for the peculiar manner in which it came, its relation to the soil would be beyond dispute. It was in its substance, as we understand, a stone. It was not of a character to be thought of as 'unclaimed by any owner,' and, because unclaimed, 'supposed to be abandoned by the last proprietor,' as should be the case under the rule invoked by appellant. In fact, it has none of the characteristics of the property contemplated by such a rule.

"We may properly note some of the particular claims of the appellant. His argument deals with the rules of the common law for acquiring real property, as by escheat, occupancy, prescription, forfeiture, and alienation, which it is claimed were all the methods known, barring inheritance. We need not question the correctness of the statement, assuming that it has reference to original acquisition, as distinct from acquisitions to soil already owned, by accretion or natural causes. The general rules of law, by which the owners of riparian titles are made to loose or gain by the doctrine of accretions, are quite familiar. These rules are not, however, of exclusive application to such owners. Through the action of the elements wind and water, the soil of one man is taken and deposited in the field of another; and thus all over the country, we may say, changes are constantly going on. By these natural causes the owners of the soil are giving and taking as the wisdom of the controlling forces shall determine. By these operations one may be affected with a substantial gain, and another by a similar loss. These gains are of accretion, and the deposit becomes the property of the owner of the soil on which it is made.

"A scientist of note has said that from six to seven hundred of these stones fall to our earth annually. If they are, as indicated in argument, departures from other planets, and if among the planets of the solar system there is this interchange, bearing evidence of their material composition, upon what principle of reason or authority can we say that a deposit thus made shall not be of that class of property that it would be if originally of this planet and in the same situation? If these exchanges have been going on through the countless ages of our planetary system, who shall attempt to determine what part of the rocks and formations, of special value to the scientist, resting in and upon the earth are of meteoric acquisition, and a part of that class of property designated in argument as 'unowned things,' to be the property of the fortunate finder instead of the owner of the soil, if the rule contended for is to obtain? It is not easy to understand why stones or balls of metallic iron, deposited as this was, should be governed by a different rule than obtains from the deposits of boulders, stones, and drift upon our prairies by glacier action; and who would contend that these deposits from floating bodies of ice belong, not to the owner of the soil, but to the finder? Their origin or source may be less mysterious, but they, too, are 'telltale messengers' from far-off lands, and have value for historic and scientific investigation."

A second case concerning the ownership of a meteorite arose in Oregon. In November, 1902, the Oregon Iron Company discovered on the land of one Ellis Hughes a meteorite, "an irregularly shaped mass of iron, with infusion of nickel and a trace of cobalt, weighing several tons, in the shape of a huge mushroom or inverted bell, in dimensions 7 ft. by 10 ft. across the top and 4½ ft. thick. When found it 'was resting with its smaller end upon the surface of the earth, not embedded in it, but within a saucer-like depression, with hazel bushes growing up about it.' In its top, as it rested in place, were numerous cavities or 'pot-holes,' as they are termed, of longer or smaller dimensions, some of them being 14 in. in depth; the whole mass being corroded, rusty, and moss-grown. Granite boulders were also found in proximity to it."

In view, probably, of the decision in *Goddard* vs. *Winchell* (*supra*), that a meteorite belonged to the owner of the land on which it was found and that the mere finder had no claim to it, the defendant evolved a very ingenious theory to justify its taking possession and removing the same. The audacity and cleverness of this theory cannot but provoke admiration although based on legal sophistry instead of sound legal principles. As noted above, the meteorite was found on the surface. There was evidence introduced at the trial tending to show that the mass was "early appropriated by the Indians and utilized and worshiped by them as a sacred object." Being so appropriated and used by the Indians, it was "severed" from the soil and therefore became personalty instead of real property.[23] Being personalty but being subsequently abandoned by the supposed Indian owners and afterward found by the defendant, it claimed that it became entitled to the same according to the common-law principle by which abandoned personal property belongs to the finder. The ingenious character of this defense makes it worth while to reproduce a part of the decision in which the evidence by which it was attempted to support the same is reviewed and the observations of the court thereon:

"In substantiation of this defense, Susap, a Klickitat Indian, 70 years of age, and about the last of his tribe, was called, who testified that when

[23] When minerals are severed from the strata in which they are found, they become personalty, though previous to such severance they are realty. *Park Coal Co.* vs. *O'Donnel*, 7 Leg. Gaz., 149 *In re Clews Estate*, 23 Pittsburg Leg. Jour., 558. Also p. 32.

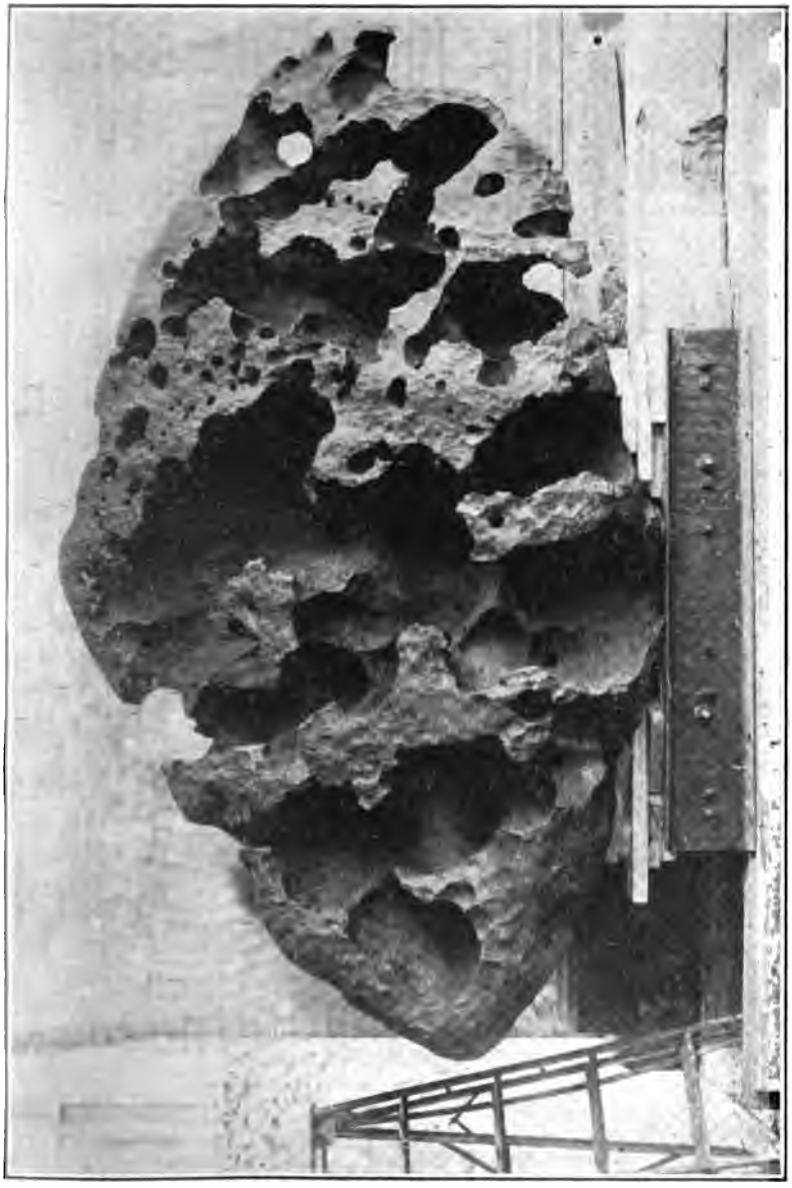


FIG. 3. — The meteorite which gave rise to the case of *Oregon Iron Co.* vs. *Hughes*, called the "Willamette" meteorite. The face shown in the figure is the top with the cavities or "potholes" referred to in the decision.
From a photograph furnished by its present owner, the American Museum of Natural History, New York City.

he was a young boy he used to go hunting with Wachino, a Clackamas chief; that he often saw the meteorite; and that there were lots of trees around it then. The stumps, as the evidence shows, are there at the present time, measuring from three to seven feet over, and some of them are very near to where it lay. Continuing, he says, the old chief told him and the other Indians that the object in question was iron; that it had a hole in it; that when it rained the water fell in there, and that the Indians went and washed their faces in the water, and put their bows and arrow in it that they used in time of war; that the medicine men said it came from the moon; and that the Indians called it 'Tomanowos.'

"Sol Clark, 47 years of age, whose mother was of the Wasco tribe of Indians, was also called, who testified that his mother told him that there was a place up there where the Indians used to go to this Tomanowos; that they used to send their young people out there — generally made them go on dark nights — and that the Tomanowos was a kind of bowl or rock that had some holes in it; and on cross-examination, that the Clackamas Indians used the rock; that it was a kind of magic or medicine rock, and belonged to the medicine men of the tribe, but that witness claimed no interest in it.

"This constitutes, in substance, all the testimony bearing upon the subject. Now, it is argued with much zeal that it is inferable from this testimony that the meteorite is an Indian relic; that it was an object of worship — a 'Tomanowos,' whatever that term implies; that the Indians must have at some time dug it from beneath the earth, where it naturally would have buried itself by impact from its fall; that they must have removed and erected it to a standing position at the place where found, and carved out the interior into 'those fantastic potholes'; and that they maintained it there, and venerated and used it in their warfare, and thereby they severed it from the soil and appropriated it to their own use, rendering it personal property in their hands; that presumably they forsook and discarded it; and that it became abandoned property, and as such the property of the finder. But what is there to show that the Indians dug it from the earth and erected it in place, except its posture, or that they carved out the holes in its crown, except that they are there? No witness said that they did this; and what has been related concerning their use of the object is traditional. Such evidence is very meager from which to infer the substantial facts involved for the predication of the defense relied upon. Nature does many fantastic things; and presumably these are the result of natural causes, and the cavities contained therein are attributable to the same agency. As against this presumption there could be no rational inference that the Indians dug it from beneath the surface of the earth and removed and erected it in the position in which it was found in the dense forests where it must have lain for some time, considering its great weight. Nor that they hollowed out the potholes in its crown, considering the almost impenetrability of the substance, and the primitive tools and instruments with which they had to do their work. So that, conceding that it was an object susceptible of Indian worship, the fact does not afford reasonable inference that it was severed from the soil and appropriated by them. They may have worshiped and utilized it, dipping their bows and arrows and laving their faces in the water accumu-

lating in these bowls; but all this they could well have done without an appropriation, as tradition tells us they worshiped Mt. Hood and other immovable objects as they existed in a state of nature, and there could have been no severance or appropriation by such use. So we conclude in this case that there was not sufficient evidence even to go to the jury, from which they would be permitted to infer that this was once Indian property which they later abandoned, or that it is an Indian relic, and hence the finder is not entitled to the ownership."[24]

At the close of the decision the court expressly disclaims deciding that the theory on which they had argued the case in the decision (that ownership and abandonment by Indians would have given title) would apply to ordinary Indian relics and the like.

These two cases may be taken as settling the law that *meteorites vest in the owner of the land on which they fall.* The principle is sound both from the standpoint of scientific hypothesis and from that of legal reasoning; and, in all probability, it will be universally followed in similar cases which may subsequently arise in any State.

[24] *Oregon Iron Co.* vs. *Hughes*, 81 Pacif., 572 (573).

IV

Legal definition of "mineral," "ore," etc., when used in deeds, leases, contracts, or other written instruments; under the United States law and mining laws; under the United States customs laws.[1]

Mineral and Ore. — Legal Definition

THE legal conception or definition of the word "mineral" is one that varies according to the circumstances under which the term is used. It can best be developed and the law relating thereto stated by a classification and discussion of the cases under the following subdivisions:

I. Legal interpretation under the common law and state statutes of the terms "minerals," "ores," etc., when these are used in deeds, leases, contracts, etc. Cases under this subdivision may arise in any State, but the majority are furnished by the States comprised in the first two groups; for in the third group the mining litigation is usually governed by federal laws.

II. Interpretations by the courts and United States Land Department under the Federal mining and land laws as to what constitutes minerals within the meaning of these laws. Under this subdivision the cases are, of course, confined to the third group.

III. Interpretations of the terms relating to minerals, ores, etc., arising under the United States customs laws.

In the first two groups of States[1a] the ownership of the surface, by the principles of the common law, carries with it the right to all that is beneath, limited by vertical planes through the boundaries, except in New York, where the State asserts its ownership of all mines of the precious metals by virtue of its sovereignty. But by deed, lease, or contract the ownership of the minerals

[1] A part of the matter comprised in this chapter has been printed as a contribution by the writer to the School of Mines Quarterly, vol. xxvii, p. 1.

[1a] See p. 7.

beneath the surface could be severed from the fee, and considerable litigation has arisen from disputes over the interpretation of the terms used in such instruments, resulting in a fairly uniform body of law on this branch of the subject.

I. Under Common Law and State Legislation

The most frequent causes of litigation have been in cases where a grant, lease, or contract was made conveying or reserving "minerals," "minerals and ores," etc. The earliest case that I have found involving the definition of the word "mineral" in American legal decisions is that of *Gibson* vs. *Tyson*, decided in Pennsylvania in 1836.[2] The dispute in this case was whether or not the phrase "all minerals or magnesia of any kind," in a reservation in a deed, included chromate of iron. The court decides that chromate of iron is a mineral within the meaning of the words of the reservation, although this decision seems to be based to some extent on evidence in the case tending to show that the parties at the time the instrument was executed regarded the particular substance as a mineral. The court says:

"But it has been objected, that according to the ordinary and common acceptation of the term 'mineral,' chrome is not included within the exception because, although properly a mineral, yet, not being a metallic substance, it is not considered by the great mass of mankind as a mineral, and embraced within that term. This objection would certainly have great weight, and perhaps could not be easily overcome, were it not for the parol evidence, and the facts established by it. This evidence, however, shows, very clearly, that it was that which is now known to be chrome, that, on the first taking up of the land in which it is found, gave to it the name of 'mine land'; that it was thought to be a metallic ore of some kind, and spoken of frequently as containing some gold or silver."

The leading case, however, among the early adjudications on this subject seems to be *Hartwell* vs. *Camman*[3] decided in New Jersey in 1854. It squarely decided that it is not necessary for a substance to contain a metal to be embraced within the term "mineral."

As it is frequently cited in most subsequent similar cases, this justifies an outline of the decision. Hartwell conveyed to Camman by an ordinary warranty deed "all mines and minerals

[2] 5 Watts, 34.

[3] 10 N. J. Equity, 128, 2 Stockton, 128.

open, or to be opened, with free ingress and egress to the same for the purpose of mining in all its various branches," in a tract of land. It appears that at the time of this conveyance the land was believed to contain workable copper ore and excavations were made in search thereof. Failing to find workable copper ore, but discovering in the exploration near the surface a "hard red substance like red shale," Camman proceeded to mine it and grind it into paint. The grantor brought suit for an injunction to stop such mining on the ground that the substance mined and ground into paint was not included in the grant. In deciding the case the court says as to the character of the mineral:

"It is a substance resembling in general appearance red shale, so soft as to be easily cut with a knife when first excavated, but differing in appearance and quality from the surrounding earth. It is found in regular strata or boulders of various sizes. . . . when broken up and ground it is used as a paint, and is valuable for that purpose."

The court then states that it was gotten out by the ordinary methods of mining and says in regard to the expert testimony in the case:

"*Professor Doremus* is the only scientific witness examined. He says, 'it may be called an argillaceous sandstone, alumina and silica being the prominent ingredients — it is not an iron ore. This comes under the head of argillaceous rocks. I wish to distinguish these classes from ores or metalliferous rocks. The position of this paint material, as it lies in the mountain, is not in *veins*, but in *strata*. The extracting of this material, as I saw it there, would not be called mining.'"

and proceeding with the opinion says:

"If the term '*mines and minerals*,' used in the deed, could, by any fair construction, be confined to metallic substances, the question involved would be easy of solution; for the metallic property found in this paint stone is so small, that for the purpose of extracting the metal it is of no value. But I do not think the terms should be confined to metals or to metallic ores. . . . It is embraced in the definition given by men of science of the term mineral. In *Bakewell's* '*Mineralogy*,' page 7, it is said the 'term mineral, in common life, is generally applied to denote substance dug out of the earth or obtained from mines.' In *Cleveland's* '*Mineralogy*,' page 1, the definition is given thus: 'Minerals are those bodies which are destitute of organization, and which naturally exist within the earth or at its surface.' My conclusion is, that this paint stone passed by the grant, and that the defendants have a right to excavate and remove it, and to convert it to their own use."

It was not long after the disposal of the above case that the New Jersey courts were called upon to wrestle with perhaps the most noted litigation that has ever arisen in the United States directly involving mineral definitions, lasting in varying forms for nearly half a century. This was concerning the franklinite deposits near Franklin Furnace, New Jersey. The character of those parts of the deposit affected by the litigation, as shown to the court, is described in the parts of the opinion of the court quoted below. The importance and irrepressible character of the litigation, the inherent difficulties of the case as well as interesting features of some of the opinions of the various courts as they labored with scientific difficulties of the subject, complicated by heroic efforts to right the supposed injustice attempted through alleged overreaching use of scientific distinctions and terms by certain early practitioners of "high finance," justify a somewhat extended statement of the litigation and citations from the opinions of the courts.

The possibility of this litigation was caused by Samuel Fowler, who in 1848, being the owner of the Mine Hill tract of land, conveyed to the Sussex Zinc and Copper Mining and Manufacturing Company "all the zinc, copper, lead, silver, and gold ores and also all other metals or ores containing metals (excepting the metal or ore called franklinite and iron ores, when it exists separate from the zinc)." On the same day by another deed Fowler conveyed to the same company "all the metal, mineral, or iron ore, usually designated and known as franklinite, found or to be found in a certain tract of land," which tract of land was a *part* of the land conveyed in the first deed. This second deed did not affect any part of the tract of land in dispute, but is referred to by the court as showing the understanding by the parties of the terms used. The Sussex company in 1852 conveyed to the New Jersey Zinc Company "all the zinc and other ores, *except franklinite and iron ores*," in the premises originally conveyed by Fowler to said Sussex company, and also by a second deed "all the metal, mineral, or iron ore, usually known or designated by the name franklinite, found or to be found, etc.," in the same tract of land that Fowler had made similar conveyance of to said Sussex company.

The terms used in this second deed between the two companies were identical with those of the Fowler deed to the second tract

of land; but as to the first deed between the two companies it will be observed that the language is not the same, for in the deed from the Sussex company to the New Jersey Zinc Company the reservation was of "franklinite and iron ores" without the addition of the limiting words "when it exists separate from the zinc," consequently as to the first deed the interest conveyed to the New Jersey Zinc Company was not quite so extensive as the interest conveyed by Fowler to the Sussex company. *All* the franklinite and iron ore was excepted, whereas in the conveyance by Fowler only the franklinite and iron ore were excepted "*when it exists separate from the zinc.*"

This residual interest (all the franklinite or iron ore mixed with zinc) of the Sussex company passed to another corporation, the New Jersey Franklinite Company. The New Jersey Franklinite Company proceeded to mine the franklinite ore that they owned; and in 1857 the New Jersey Zinc Company attempted to enjoin the New Jersey Franklinite Company [4] from further mining and removing of ore on two grounds: (1) that the reservation of all the franklinite in the deed by the Sussex company was fraudulent, which contention was decided against it by the court; and (2), with which we are particularly interested in this connection, that the ore in question was a zinc ore which passed by the terms of the grant to the New Jersey Zinc Company. On this branch of the case the court said: [4a]

"The incontrovertible fact is, that the mass consists of zinc ore and franklinite in such close mechanical combination that neither can be taken from the mine without removing the other. Which party, by the terms of the deed has title? Each party claims the entire mass—one or the other must take it. . . . . The ownership of the property is in no sense joint. . . . No partition of their interest could be made. . . . One or the other must be entitled to it. The deeds were not intended to convey, and do not convey, distinct interests in the same lode, vein, or stratum. Some test must be applied by which the title to each vein, or distinct portion of a vein, can be ascertained to belong to one or the other of the parties.

"It is satisfactorily shown by the evidence that, at the dates of the deeds in which this controversy has its origin, and as late as the year 1853, the masses or veins of ore upon Mine Hill were regarded and known as franklinite. The ore was so called by the proprietors of the mines and by the miners themselves. It was so described in scientific treatises and in geological reports.

[4] While this litigation was pending the title of the New Jersey Franklinite Company passed by foreclosure of a mortgage to the Boston Franklinite Company, which became a party to the litigation as mentioned later in the opinion of the court.

[4a] *The New Jersey Zinc Co.* vs. *The New Jersey Franklinite Co.*, 2 Beasley, 322.

It was so classified and arranged in mineralogical cabinets and exhibitions. The mass was known not to consist entirely of that mineral. Pure specimens of crystals or franklinite were known to exist only in small and unimportant bodies, having no value for practical purposes. In the general mass of the ore, there was mingled with the franklinite, ores of zinc and other minerals in various proportions. But so far as was known, franklinite constituted the predominating element which gave character and title to the mass. Zinc ore had been discovered and used in at least one locality, but no well defined vein of zinc ore had been developed. Upon Stirling Hill, in the immediate vicinity, distinct, well defined veins of zinc and franklinite had been developed, and the zinc vein extensively worked. Here, as on Mine Hill, the ores were found to some extent in mechanical combination. Both veins contained more or less of each mineral. In the zinc vein the red oxide of zinc predominated; it formed the enveloping mass which gave name and character to the ore, and though grains of franklinite were found extensively disseminated throughout the mass, it was universally known and designated as zinc ore. On Stirling Hill, the separate lodes, though in immediate contact, were generally well defined and distinguished by clear lines of demarcation. From the general geological character of the vicinity, it was anticipated that, in the progress of investigation, a similar distinct and well defined vein of zinc ore would be developed upon Mine Hill. Upon this state of facts within the knowledge of parties, there seems to be no room for rational doubt as to what the parties intended by the terms used in the deed as descriptive of the subject matter of the conveyance. By 'zinc ores' was meant those veins or lodes in which the ore of zinc was the predominating ore, and 'franklinite,' not the pure mineral of that name, which was never found except in small and detached specimens, but those veins are lodes in which franklinite predominated, and which was known and designated as franklinite ore. The instrument must be construed according to the mind and intent of the parties at the time it was executed. . . . The evidence abundantly shows that the term franklinite was in constant and familiar use to designate the ore or mass in which that mineral predominated."

This decision would seem to be based on sound legal and scientific reasoning, so far as it related to the interpretation of the terms of the deed conveying the mineral. However, the case was appealed to the higher court and the decision of the chancellor was overruled.[5]

In the Court of Errors and Appeals the want of good faith in not executing the deed by the Sussex company, so as to convey all its rights to the New Jersey Zinc Company as had previously been agreed, seemed to appeal very strongly to this higher court; and by a divided vote (7 to 5) the decision of the chancellor was reversed and it was adjudged that the whole of the deposits belonged to the New Jersey Zinc Company.

[5] *New Jersey Zinc Co.* vs. *Boston, etc., Co.*, 15 N. J. Eq., 419.

It is a legal maxim that "hard cases make bad law"; and the above cited opinion of the court is a striking instance, for, in its endeavor to correct the injustice arising from the sharp practice of the Sussex company in making the deed and obtaining an acceptance thereof, and the negligence of the New Jersey Zinc Company in accepting a deed that did not fully carry out the prior contract between the two companies, this court evolves a decision that is a masterpiece of legal hair-splitting with, however, doubtless, an honest intention of promoting what they regarded as essential justice. After stating various transfers of this residual interest reserved as above stated and the organization of the Boston Franklinite Company and the profits of the promoters thereby, the court becomes eloquent and says:[5a]

"What oceans of money they made no one can tell. All this while this zinc company pursued its plodding way, building oven after oven, furnace after furnace, and factory after factory, expending in such improvements, upon the faith of this transfer of stock, over $300,000, besides the very large consideration money it had paid, forcing success along the hard road of industry, developing, according to the true intent of its charter, the ore of zinc, manufacturing that pure snow-white paint for the calls of commerce and comfort, convenience and elegance of life. They were the workers in the hive — they were the silk-worms painfully weaving their shrouds of silken thread, while this franklinite company toils not, neither does it spin — not an ounce of its boasted franklinite has it ever yet yielded to the demands of commerce. It springs at once into the butterfly stage of its existence, whose only object in life is to spread its golden wings to the glittering sunshine and multiply its worthless species."

The court then proceeds to discuss the question of what the parties intended by the exception in the deed, but leaving entirely out of account two facts that the chancellor states were established by evidence before him: (1) that in the similar deposit on Sterling Hill that a large deposit of red oxide of zinc had been found and, being close together, therefore the parties probably supposed the same condition to exist in the two deposits; and (2) that the difference between the terms of the contract and the deed were discussed between the directors of the two companies at the time the deed was accepted, so that they must have known that when franklinite was excepted from the grant something was meant by it. But the court nevertheless proceeds:

5a *New Jersey Zinc Co.* vs. *Boston, etc., Co.*, 15 N. J. Eq. 419 (434).

"What, then, was meant by the parties at the time they used the term zinc ores in this deed? Did they mean this vein in dispute? . . . The evidence also shows that there were no other ores on the premises except this vein of franklinite and iron ores, and all parties well knew it. Now, may we not ask, if it was not the intention to convey this vein by the name of a zinc ore, what did the parties intend it to convey? It is apparent, that if they did not intend to convey this vein by the name of a zinc ore, it must have been the intent of both parties to convey nothing. I think these facts show that it must have been the intent to convey this vein by the name of a zinc ore, for there is nothing else upon which the deed could operate, and both parties must have known it. There is nothing upon this property but this vein of franklinite and iron ore. The franklinite and iron ores are excepted in terms, and if this vein was meant to be excepted as franklinite the deed conveys nothing, as both parties must have known. Under these circumstances, we can draw no other conclusion than that the parties meant to convey something by the deed, and that could only, as both parties must have known, have been the vein in question. . . . But it is urged that the evidence shows that, at the date of the deeds, and as late as 1853, the mass or veins of ore in Mine Hill were regarded and known as franklinite; that the ore was so classified and arranged in mineral cabinets and exhibitions; that it was described in scientific treatises, in geological reports, and was so called by the proprietors of the mines and by the miners themselves. But what do all these amount to if it appears by the overwhelming weight of other considerations, some of which we have indicated, that the parties to the deed, at the very time of the execution, intended to convey the vein in question by the name of zinc."

The "overwhelming" "considerations" "indicated" is the legal quibbling in the above citation. This entertaining court then proceeds to describe how Berthier in 1821, having received from "Doct Fowler, who was a learned mineralogist," specimens of the mineral found in Mine Hill,

"resolved it into its elements and discovered that it was a new mineral species, and christened it by the name of franklinite, because it had first been found at Franklin Furnace, in Sussex County, New Jersey."

and that this vein had been worked for zinc for sixty years, but continues bitterly:

"that the old acquaintance, zinc, was for some time, as is customary in such cases, overslaughed in the halls of the learned by this new-born babe of science. . . . But this franklinite was the most useless iron ore that had been discovered. There it had laid for an hundred years within 300 yards of an iron furnace, tortured in every shape that skill and avarice could put upon it to declare its hoped-for usefulness, and the only thing ever successfully generated between it and the furnace was a *salamander*."

Then this court proceeds to perpetually enjoin the Boston Franklinite Company from digging any of the franklinite ore in Mine Hill.

This settled the title to the south part of Mine Hill for a time; but later, as mentioned in the case of *Meredith* vs. *Zinc and Iron Co.*, 55 N. J. Eq., 211 (at p. 215), a person who was not a party to the previous litigation, and who held an unsatisfied mortgage on the franklinite in the south half, foreclosed his mortgage and obtained title thereto. He then began suit in a Federal court against the New Jersey Zinc Company, and, as might have been expected, the Zinc company was beaten. The result of the litigation was that the warring interests combined and the new company became the indisputable owner of all the ores in the south half of Mine Hill and of the zinc ores in the north half. In the meantime the title to the franklinite on the north half of Mine Hill became vested in the Lehigh Zinc and Iron Company and litigation broke out again.

The first suit was in trover for the alleged conversion by the Lehigh company of 23 carloads of ore taken from the north half of Mine Hill. This case came before the Court of Errors and Appeals of New Jersey.[6] In the decision, after stating the effects of the original deeds and exceptions contained therein as above outlined, the court proceeds:

"The meaning of this phrase 'separate from the zinc,' as applied to the franklinite, has given rise to some controversy. Franklinite is itself a compound of zinc, and therefore cannot exist chemically separated from zinc. As the parties to these deeds were dealing with ores, we think the phrase meant 'separate from zinc ore,' and as by zinc ores is intended 'a mineral body containing so much of the metal of zinc as to be worth smelting' (2 Beas, 346), we think the exception in the plaintiff's title should be so construed as to exclude from the title only those veins, *strata*, or masses of franklinite or iron ores which can be mined without interfering with any veins, *strata*, or masses of zinc ore in quantity and richness worth mining for zinc.

"These deeds speak also with reference to the time of their execution, and are to be applied to their subject-matter now, as they would have been applied then. If a specified vein, *stratum*, or mass of franklinite or iron ore can be removed without interfering with any zinc ore which in quantity and richness was then worth mining for zinc, that franklinite or iron ore would then, under our view of these deeds, have been excepted from the plaintiff's title, and consequently, it must be excepted now.

[6] *Lehigh, etc., Co.* vs. *New Jersey, etc., Co.*, 55 N. J. Law, 350.

"No advance in the arts and sciences can extend those grants over any portions of the Mine Hill farm, which they would not at their date have been deemed to embrace by then applying to their terms and their subject-matter correct rules of construction."

The case was reversed in this court because the defendant, the Lehigh company, was not permitted to introduce evidence tending to show that the ore from the vein in dispute was in 1848 called franklinite and, although containing some zinc, was then considered worthless as a zinc ore. The case was remanded to the lower court, but apparently the litigation in this form was dropped.

But a suit in ejectment was begun by the New Jersey, etc., Company against the Lehigh, etc., Company, for the same body of mineral. This was decided in favor of the defendant and confirmed on appeal.[7]

Having been beaten in the litigation at every point, the New Jersey company gave up the attempt to obtain the franklinite deposits by virtue of a supposed legal title and again formed a combination with the opposing company, so that the entire deposit is now owned by one corporation and the possibility of litigation extinguished.

A frequent source of mineral litigation is from disputes as to whether stone used for building purposes, etc., passes under the word "mineral." Perhaps the leading case of this kind is that of *Armstrong* vs. *Granite Company*, 147 N. Y., 495. This was a suit which involved the construction of a deed conveying "all the mineral ores," and a second deed between the same parties to the same premises, but using this time the words "minerals and ores." The dispute was as to whether these deeds gave the right to quarry and remove granite. As to the deed containing the phrase, "mineral ores," the court remarks:

"It is plain the granite did not pass. The word 'ore' has a definite signification, and designates a compound of metal and other substance. Granite neither in a popular or scientific sense is a mineral ore."

The court then proceeds to discuss fully the meaning of the phrase "minerals and ores" used in the second deed, and reaches the following conclusions:

"It is plain that an owner of land who grants the minerals to another does not use the word as synonymous with mineral substances, because if this meaning was attached to the grant it would amount to a grant of the

[7] *New Jersey, etc., Co.* vs. *Lehigh, etc., Co.*, 59 N. J. Law, 189.

whole land, as the soil and all below it would be embraced in that description. . . . Upon the authorities we think we should not be justified in holding that the granite was not embraced in a reservation or grant of 'minerals' in the absence of qualification. It is no doubt true that this word in its more common application in a grant of 'minerals' would be deemed to refer to metallic substances. This perhaps grows out of the fact that mining is to a great extent prosecuted for the purpose of obtaining gold, silver, iron and other metals, and grants of 'minerals' or reservations thereof in conveyances of public lands are most frequently made with reference to mineral bearing ores or metallic deposits. But it would be an unwarranted limitation of such grant or reservation, to exclude from its operation beds of coal or other non-metallic mineral deposits of commercial value, or to confine it to such minerals as were known or supposed to be on the premises at the time. The grant or reservation of minerals in a deed contemplates substances to be severed and taken away from the premises, and it is difficult to suppose that the parties to such a deed intended to exclude from the grant any description of valuable mineral which would come within the legal meaning of the word, which might thereafter be discovered. We are of opinion, therefore, that the words 'minerals and ores' in the grant of 1871, standing alone, would include the granite upon the premises."

However, on other provisions of the deed showing that the minerals and ores referred to were only those to be gotten by subterranean mining while the granite could only be worked by an open quarry, the court decides that in this case the deed did not pass the granite.

Another New York case that involved the same question is that of *Brady* vs. *Brady*, 65 N. Y. Supp., 621. Here the words of the reservation were: "all mines and minerals, . . . with the right . . . to dig and carry away the same." The material in dispute was a crystalline limestone or marble and the court says:

"The material, clearly, is a mineral, and it is reserved from the grant unless the 'nature and context of the deed shows that it was not intended to be included' in the reservation. There is nothing to justify such a finding. The only claim that can be made is that the ledges of rocks were so apparent, and covered so large a portion of the original 100 acres, that the parties could not have referred to them; that to except them would practically destroy the grant. Yet it may equally well be said that the knowledge that this mineral existed was the very reason that a reservation was inserted in the deed."

This same property came into litigation in the United States Court [8] and the United States Circuit Court of Appeals endorsed the above decision of the New York Court, saying:

[8] *Phelp* vs. *Church of Our Lady, Help of Christians*, 115 Fed., 882.

"And, finally, the sublease of June 25, 1895, by the assignee of the term, the Oswegatchie Quarry Company, to the Metropolitan Marble Company (the plaintiff company), contained the same exception and reservation, namely, 'excepting and reserving mines and minerals as specified in original conveyance.' Since our judgment upon the former writ of error, the Supreme Court of New York, in the case *Brady* vs. *Brady*, 65 N. Y. Supp., 621, has held that the ownership of the marble in the tract of land conveyed by the above-mentioned deed of John La Farge remained in him by virtue of the exception and reservation of 'mines and minerals' contained in his deed. In so holding, the Supreme Court followed the interpretation which the Court of Appeals of the State of New York gave to the word 'minerals' in a grant or reservation in its opinion in the case of *Armstrong* vs. *Granite Company*."

The same matter, however, was before the New York Court of Appeals (the final authority in that State), and this court reversed the case of *Brady* vs. *Brady* (*supra*), saying:[9]

"The question presented in the case at bar is whether the exception and reservation in question is broad enough to include a bed of limestone and the open quarrying of the same. . . . It may be well enough to quote once more the reservation to be construed: 'Excepting and reserving therefrom unto the parties of the first part, their heirs and assigns forever, all mines and minerals which may be found on the above piece of land, with the right of entering at any time with workmen and others to dig and carry the same away.'"

The court then reviews a number of English cases involving substantially the same question and continues:

"It is thus apparent that each case must be decided upon the language of the grant or reservation, the surrounding circumstances and the intention of the grantor if it can be ascertained. The adoption of arbitrary definitions in reference to mineral substances buried in the earth is not permissible. The word 'mineral' standing by itself might, under a broad, general, popular definition embrace the soil and all that is to be found beneath its surface; under a strict definition it might be limited to metallic substances, and under a definition coupling it with mines, it covers all substances taken out of the bowels of the earth by the process of mining.

"We are of opinion that under the exception and reservation in question, John La Farge did not reserve the right to himself, his heirs and assigns forever, to the limestone on the premises conveyed, and to conduct open quarrying for the purpose of taking possession thereof."

It will be observed that the decision of the court in this case turns upon the coupling of the word "minerals" with "mines," and that since the limestone was worked by quarrying instead

[9] *Brady* vs. *Smith*, 181 N. Y., 178.

of by mining, that therefore it was not within the reservation in the instrument construed in this case, and that therefore the decision of the case as to substance alleged to be mineral was not on the same point as in the case of *Armstrong* vs. *Granite Company* (*supra*), and hence does not overrule that case nor that of *Brady* vs. *Brady* (*supra*), that granite and limestone would be included in a grant or reservation of minerals if this word stood alone and without other words which would imply some other intention on the part of the grantor.

In a Michigan case [10] on a reservation in a conveyance of all "mines and ores of metals" the court decides that "marble or serpentine" not known to exist at the time of the conveyance did not pass, as not being in contemplation of the parties at the time the deed was made, but the decision might better be placed on the ground that neither marble nor serpentine is an "ore of a metal." The decision that the mineral was not included because it was not known to exist at the time the deed was made is not sound. The New York Court, cited above, and the weight of authority are against this position.

Another source of litigation involving the definition of minerals has been disputes about petroleum and natural gas. The earliest case I have found involving this question is *Funk* vs. *Holdeman*, 53 Pa. St., 229, decided in 1866, in which the court says: "Throughout this opinion I have treated oil as a mineral. Until our scientific knowledge on the subject is increased, this is the light in which the courts will be likely to regard this valuable production of the earth." But in this case classification of oil as a mineral only arose incidentally and was not necessary to the decision of the case. Also in the case of *Appeal of Stoughton et al.*, 88 Pa. St., 198, the court says: "Oil, however, is a mineral, and being a mineral is a part of the realty."

Curiously, however, the first time the question came directly before the Pennsylvania Supreme Court in the interpretation of a reservation in a deed of "all mineral" in the case of *Dunham Short* vs. *Kirkpatrick*, 101 Pa. St., 36, it decided the classification of petroleum opposite to the previous case, placing the decision on the doubtful ground of the views of the "mass of mankind," and adopting the words of a previous decision on another case, saying:

[10] *The Deer Lake Company* vs. *The Michigan Land and Iron Company*, 89 Mich., 180.

"We must, by some means, limit the meaning of the word 'minerals.' But the rule by which this may be done is well stated by Chief Justice Gibson in the case of the *Schuylkill Navigation Company* vs. *Moore*, 2 Wk., 477, as follows:

"'The best construction is that which is made by viewing the subject of the contract as the mass of mankind would view it; for, . . . it may be safely assumed that such was the aspect in which the parties themselves viewed it.' . . . Certainly, in popular estimation petroleum is not regarded as a mineral substance any more than is animal or vegetable oil, and, it can, indeed, only be so classified in the most general or scientific sense."

However, when the subject was next before the Pennsylvania Supreme Court in the case *Gill* vs. *Westan*, 110 Pa. St., 313, the first view was apparently again adopted, for the court says, referring to petroleum: "It is a mineral substance obtained from the earth by a process of mining, and lands from which it is obtained may with propriety be called mining lands."

Again in a later case, *Westmoreland and Cambrian Natural Gas Company* vs. *De Witt*, 130 Pa. St., 235 the court says:

"The learned master says gas is a mineral, and while *in situ* is part of the land and therefore possession of the land is possession of the gas. But this deduction must be made with some qualification. Gas, it is true, is a mineral. . . . Water, oil, and still more strongly, gas, may be classed by themselves, if the analogy be not too fanciful, as minerals feræ naturæ. . . . They belong to the owner of the land, and are a part of it, so long as they are on or in it, and are subject to his control."

But if gas is a mineral, *a fortiori* oil is a mineral. When we examine the decisions of courts of other States we find them uniformly holding oil and gas to be minerals.

In the case of *Williamson* vs. *Jones*, 19 S. E., 436 (W. Va.), the court states one of the contentions to have been that petroleum is not something of which waste can be committed, but is only capable of the qualified ownership of belonging to him who first appropriates it, no matter where it may be situated, and continues:

"Whatever the earlier decisions in other States may have been, it has never been so held in this State; and the authorities now very generally — universally so far as I have examined them — hold petroleum to be a mineral, and as much a part of the realty as timber, coal, or iron ore."

In the case *Murray* vs. *Allred*, 100 Tenn., 100, 43 S. W., 355, the question arose as to whether petroleum and natural gas were

included under the words "mines, minerals, and metals." The court elaborately reviews the theories of the origin of the substances, their composition, the technical definition of the above words, and decides that petroleum and natural gas are included in the term "mineral." Consequently, it may be stated as a well settled legal principle in the United States that petroleum and natural gas are "minerals" and pass under that term when used in conveyances, contracts, etc.[11]

By special statutory provision, in order to prevent a monopoly of an absolutely necessary article, Congress early excepted saline deposits from disposition as other mineral land, and also from sale or entry or homesteading as agricultural land, and such saline lands were disposed of in a special manner designed to prevent monopolies. However, by the Act of January 31, 1901, it was provided that saline lands might be located and patented under the provision of the mining laws relating to placers. This Act of 1901 was probably passed on the theory that, by the wide discoveries in later years of immense deposits of salt in numerous parts of the country and new methods of mining the same, the danger of monopoly no longer existed.[12]

As to coal, it is so clearly a mineral that it does not appear that any direct litigation has ever arisen as to its being included in a grant or reservation of minerals, but in nearly all of the previously cited cases coal is mentioned in the decisions as being an example of a mineral that would pass under that name in a conveyance.[13]

Iron pyrites mixed with coal do not pass by a grant of "all the coal in, under, and throughout" land, but belong to the owner of the land; and if the pyrites are mined and thus severed from the earth and brought to the surface and separated from the coal, the owner of the land can recover the value of the pyrites at such place less the cost of mining the same and separating it from the coal.[14] Also where the refuse from dressing zinc containing 7½ per cent. zinc was found to be valuable for paving

[11] *Gas Company* vs. *Tyner*, 131 Ind., 277; *Petroleum Company* vs. *Transportation Company*, 28 W. Va., 210; *Thompson* vs. *Noble*, 3 Pittsb., 201; *Preston* vs. *White*, 50 S. E., 236 (W. Va.); *Lanyon Zinc Co.* vs. *Freeman*, 68 Kan., 691, 75 Pac., 995; *Rymer* vs. *South Penn. Ore Co.*, 54 W. Va., 530, 46 S. E., 550; *Isom* vs. *Rex Crude Oil Co.*, 82 Pac., 317 (Calif.).

[12] *Morton* vs. *Nebraska*, 21 Wall, 660; *Re Salt Bluff Placer*, 7 L. D., 549.

[13] *Henry* vs. *Lowe*, 73 Mo., 96.

[14] *Smoot* vs. *Consolidated Coal Co.*, 114, Ills. App., 512.

blocks it was held that the refuse belonged to the lessor, the lease being for "all zinc ores, sulphurets of zinc, and iron ores," and the lessee must account to the lessor for the value of that sold.[15]

From the scientific standpoint, water is a mineral that is liquid at the temperature of the larger part of the earth's surface. It is also classified as a rock.[16] Water plays such an important part in all departments of human activity that a large body of law has developed dealing with its ownership and use, which is summarized in a later chapter.[17] It has never been contended, or held by the courts, that water passed or was reserved under the term mineral used in a grant or reservation in a deed. Like the soil, water is not ordinarily mined or extracted for commercial uses, and hence there is no reason or occasion, in the ordinary course of business transaction, to separate the ownership of the water from that of the earth containing it; and so the law (following the general course of business) does not include it in a grant or reservation under the general term "mineral," although the ownership of subterranean waters may be separated from the soil containing the same by a special provision in a conveyance or other legal instrument.

In England clay, both that of fine quality (kaolin), used for making chinaware, and ordinary brick clay are held to be minerals in law; but in the United States apparently no cases have come before the court involving the legal classification of clay. Metamorphosed clay or slate has exactly the same legal status as ordinary clay. In England it is held to be included under the term "mineral," but it has not been passed upon by the courts in the United States.

We may summarize the American law as to the legal definition and meaning of the word "mineral," when used in deed, leases, or other legal instruments, as including, in the absence of special provisions in such instruments, all metallic minerals of sufficient value to justify mining and extracting the same, whether for the purpose of reducing the metal therefrom or some other industrial

[15] *Doster* vs. *Friedensville Zinc Co.*, 140 Pa. St., 147.

[16] Grabau, "On the Classification of the Sedimentary Rocks," *Am. Geologist*, April, 1904, p. 228; Kemp, "Handbook of Rocks," p. ; *Westmoreland, etc. Co.* vs. *De Witt*, 130 Pa. St., 235 (246); *State* vs. *Indiana, etc. Co.*, 120 Ind. 575.

[17] See chap. xviii.

use. It also includes rock used for building material, etc., coal, petroleum, and natural gas. Kaolin, brick clay, slate, etc., have not been passed upon by the American courts; but on the authority of the English cases, and the decisions of the land departments hereinafter mentioned, the probabilities preponderate that the courts will hold them to be included under the term "mineral" the same as granite, marble, etc.

The first decision that I have found in which a definition of the word "ore" is given is *Marvel* vs. *Merritt*, 116 U. S., 11, in which the court adopts the following from Webster: "*Ore*, the compound of a metal and some other substance, as oxygen, sulphur, or arsenic, called its mineralizer, by which its properties are disguised or lost." This definition would apply to metallic minerals, a subdivision of the general term "minerals," but leaves out of account entirely the distinguishing characteristic of an ore as commonly understood; that is, matter containing enough mineral or metal to pay for mining the same and extracting therefrom such mineral or metal. In *Doster* vs. *Friedensville Zinc Co.*, 140 Pa. St., 147 (151), the fact is mentioned that

> "Both in common and scientific parlance there is a difference between the terms, 'minerals' or 'mineral and fossil substances' and 'ores.' The term minerals, though frequently applied to substances containing metals, in its proper sense includes all fossil bodies or matters dug out of mines."

The decision contains no more explicit definition of the term "ore"; but the implication is that it was regarded as applying to metallic minerals without further qualification. In *Armstrong* vs. *Lake Champlain Granite Co.*, 147 N. Y., 495 (501), the term is defined as follows: "Ore: designates a compound of metal and other substances." Perhaps the best scientific and commercial definition that can be given of the word "ore" is that it is a mineral or mineralized rock that can be profitably mined. By this definition, however, a mineral that would be included under the term ore one day might, by a fluctuation of the metal or mineral market, be excluded the next day; and it is probable that it is the recognition of the uncertain, shifting value of the term that has been the cause of its use in legal instruments only in connection with the more fixed term "mineral," and the reason also that the courts have devoted their attention, when the question of definition arose, solely to the comparatively fixed and stable term "minerals."

II. Under United States Land and Mining Laws

Proceeding to the decisions under the United States land laws, it is first to be noted that the statutes of the United States, sec. 2318, chapter 6, revised statutes, provide

"In all cases lands valuable for minerals shall be reserved from sale except as otherwise expressly provided by law."

and sec. 2319.

"All valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase . . ."

Under this important statute the question has often arisen as to what is a mineral and what is mineral land within the meaning of the statute.

The definition of a mineral by Commissioner Drummond of the General Land Office, in a general circular of July 15, 1873, has frequently been quoted since. This is:

"That whatever is recognized as a mineral by a standard authority on the subject, where the same is found in quantity and quality to render the land sought to be patented more valuable on this account than for purposes of agriculture, should be figured by this office as coming within the purview of the mining act of May 10, 1872."

The Act of 1872 referred to in this definition contains the statutory provisions quoted above, which were afterward incorporated into the revised statutes.

On most of the questions connected with the interpretation of the land laws, and particularly concerning the character of the land, the decision of the Land Department is final, so that its interpretations have the effect of law, and I present a synopsis of those that relate to minerals and mineral lands.

Land containing gold in sufficient quantities to justify men of ordinary prudence in the expenditure of money and labor in mining development must be regarded as mineral in character,[18] but gold in non-paying quantity will not defeat the agricultural character of the land. [19]

For land containing limestone to fall within the mineral laws

[18] 23 L. D., 34 (L. D. is the abbreviation for Land Decisions, a series of volumes containing the decisions of the Interior Department on questions involving public lands).

[19] 7 L. D., 424.

it must affirmatively appear that it is more valuable for the limestone than for agricultural purposes.[20]

Guano is held in a decision of the land department to be a mineral.[21] The decision says:

"Guano is the excrement of sea birds, accumulating during a long period of years into beds of varying thickness. It is a phosphate deposit, and is classed by Dana in his 'System of Mineralogy' among the apatite group or minerals. . . . Chemical analysis of the Gunison Island phosphate shows that its composition is substantially the same as that of the phosphate deposits of Florida. In the recent case of the Florida Central and Peninsula Railroad Company (26 L. D., 600), the department held, relative to Florida phosphate lands, that land valuable for deposits of phosphates are mineral lands within the intent and meaning of the laws relating to the disposal of the public domain. It must be said, therefore, that guano is a mineral, and that lands valuable for deposits of guano are within the meaning of the mining and other laws of the United States."

The question arose in connection with certain lands on Gunison Island in the Great Salt Lake, in Utah, which had been located as placer deposits. The decision upheld the rights of the locators under the mining laws against other claimants on the grounds, stated above, that guano is a mineral.

"Under all authorities gypsum is a mineral." [21a]

"It was early determined by the Department that the Act of May 10, 1872, which describes certain land containing mineral deposits was applicable to land containing deposits of borax, carbonate and nitrate of soda, sulphur, alum, and asphalt; and I believe that, from the passage of the law until the present time, the definition of the term 'valuable mineral deposits' has been held to include the minerals and alkaline substances." [22]

"Lands containing mineral springs not of a saline character, are subject to sale under the acts relating to the sale of mineral lands." [23]

Under the land laws of the United States petroleum has been recognized as a mineral within the meaning of such laws, both by the courts and by the decisions of the Land Department. In the case of *Gird* vs. *California Oil Company*, 60 Fed., 531, the litigation arose in a mining district organized as an oil district, called the Little Sespe petroleum mining district. In the opinion in this case the court says:

"It is undoubtedly true that petroleum, with its natural gas, unlike other

[20] 22 L. D., 353; 30 L. D., 475.
[21] 27 L. D., 95.
[21a] 23 L. D. 34.
[22] 1 L. D., 561.
[23] 1 L. D., 562; 9 Copp's Land Owner, 230.

mineral deposits, is movable. . . . But, as the normal condition of petroleum is one of repose, and not motion, it belongs to the rock in which it is imbeded."

The leading case in the courts on the question of what constitutes mineral lands under the above-cited statute is *Davis's Administrator* vs. *Weibbold*, 139 U. S., 507. This was a case of a contest between holders of a mining patent and a title acquired under the town site act, and in the case the whole question of mineral lands is fully discussed by the United States Supreme Court, the final authority in such cases. The court says:

"When the entry of the town site was had, and the patent issued, and the sale was made to the defendant of the lots held by him, it was not known — at least it does not appear that it was known — that there were any valuable mineral lands within the town site, and the important question is whether in the absence of this knowledge the defendant can be deprived under the laws of the United States of the premises purchased and occupied by him because of a subsequent discovery of minerals in them and the issue of a patent to the discoverer.

"After much consideration the answer must be in the negative. It is true the language of the revised statutes touching the acquisition of title to mineral lands within the limits of town sites is very broad. The declaration that 'no title shall be acquired' under the provisions relating to such town sites, and the sale of lands therein 'to any mine of gold, silver, cinnabar or copper; or to any valid mining claim or possession held under existing laws,' would seem on first impression to constitute a reservation of such mines in the land sold, and of mining claims on them, to the United States; but such is not the necessary meaning of the terms used; in strictness they import only that the provisions by which the title to the land in such town sites is transferred shall not be the means of passing a title also to mines of gold, silver, cinnabar or copper in the land, or to valid mining claims or possessions thereon. They are to be read in connection with the clause protecting existing rights to mineral veins; and with the qualification uniformly accompanying exceptions in acts of Congress of mineral lands from grant or sale. Thus read they must be held, we think, merely to prohibit the passage of title under the provisions of town site laws to mines of gold, silver, cinnabar or copper, which are known to exist, on the issue of the town-site patent, and to mining claims and mining possessions, in respect to which such proceedings have been taken under the law or the custom of miners as to render them valid, creating a property right in the holder, and not to prohibit the acquisition for all time of mines which then lay buried unknown in the depths of the earth. The exceptions of mineral land from pre-emption and settlement and from grant to States for universities and schools, or the construction of public buildings, and in aid of railroads and other works of internal improvements, are not held to exclude all land in which minerals may be found, but only those where the mineral is in sufficient quantity to add to their richness and to justify expenditure for its extraction, and known to be so

at the date of the grant. There are vast tracts of country in the mining states which contain precious metal in small quantities, but not to a sufficient extent to justify the expense of their exploitation. It is not to such lands that the term mineral in the sense of this statute is applicable "

The only decisions of the Land Department directly on the subject, hold [24] that clay is not locatable as a mineral, on the ground, that being everywhere present in the soil, in greater or less quantity, to permit it to be located as mineral land would allow all agricultural land to be located under the guise of mineral claims. It is claimed [25] that this decision is practically overruled by a later one of the Department.[26]

Other minerals which have been held by the decisions of the Land Department to come within the United States laws relating to mineral land are: albertite, gilsonite, alum, amygdaloid bands, agate, fahl-bands, garnet, graphite, lithographic stone, mica, opal, slate, tin, turquoise, amber, and wax.

Land containing sandstone valuable for building purposes, and more valuable on that account than for agricultural purposes, is mineral land within the mining statutes.[27] Land chiefly valuable for marble and slate contained therein is mineral land within the meaning of the statute and cannot be selected by a railroad as part of an indemnity grant,[28] and the same is true of land chiefly valuable for asphaltum,[29] and for oil and gypsum.[30]

Land not shown to contain mineral deposits in paying quantities of substances for which mining operations are usually conducted, but which appears to be desired by the parties attempting to secure title thereto chiefly on account of the fact that it contains the entrance to a cave in which are found crystals, stalagmites, stalactites, geodes, etc., which are sold as natural curiosities is not mineral land within the meaning of the mining laws.[31]

[24] *Jordan* vs. *Idaho Aluminum M. & M. Company*, 20 L. D., 500; Dunluce Placer Mine, 6 L D. 761; *King* vs. *Bradford*, 31 L. D., 108.

[25] Snyder on Mines, sec., 144.

[26] *Pacific Coast Marble Company* vs. *Northern Pacific Ry. Company*, 25 L. D., 233.

[27] *Brendatte* vs. *Northern Pacific Ry. Co.*, 29 L. D., 248; *Hayden* vs. *Jamison*, 26 L. D., 373.

[28] *Schrimpf et al.* vs. *Northern Pacific R. R. Co. et al.*, 29 L. D., 327.

[29] *Tulare Oil and M. Co.* vs. *Southern Pacific R. R. Co.*, 29 L. D., 269.

[30] *McQuiddy et al.* vs. *State of California*, 29 L. D., 181.

[31] *South Dakota* vs. *McDonald*, 30 L. D., 357.

Under United States Customs Laws

The United States tariff laws now in force admit "minerals, crude, or not advanced in value or condition by refining or grinding, or by other process of manufacture, not specially provided for in this act," free of duty. The minerals "specially provided for" are:

"Metallic mineral substances in a crude state, and metals unwrought not specially provided for in this act, 20 per centum ad valorem; monazite sand and thorium, six cents per pound; mica, unmanufactured or rough trimmed only, six cents per pound and twenty per centum ad valorem; mica cut or trimmed, 12 cents per pound and twenty per centum ad valorem."

Under these as well as under prior tariff laws a number of important questions have arisen as to what substances came within the terms of the above cited statutes and other tariff laws. One of the most interesting cases was concerning natural gas. At Buffalo natural gas was piped across the river from Canada and sold in the United States; and the question arose, was it a "crude mineral" or a "crude bitumen" within the meaning of the tariff laws. If so, it could be brought into the United States free of duty; but if not, it must pay 10 per cent. duty. The case arose in 1891 and was carried up to the courts, which finally decided that natural gas should be admitted duty free as a "crude mineral." The matter first came before the Board of General Appraisers, and in their opinion, quoted *in re* Buffalo Natural Gas Fuel Company, 73 Fed., 191, they say:

"The natural gas in question is similar to that produced in Pennsylvania and Ohio, but it was not imported prior to October 1, 1890. Consequently, there are no precedents to serve as guides. Nor does it appear that at or prior to the passage of the present tariff act the dutiable character of natural gas was ever considered in or out of Congress. Nor has there ever been any trade or popular designation which would indicate its proper classification for dutiable purposes. It is proper, therefore, to resort to the evidence of scientific experts and to other authorities bearing upon the question. . . . While there was conflict in the testimony, the preponderance of the evidence was to the effect that natural gas is a crude mineral. Lexicographers and mineralogists give the word 'mineral' in its primary and broadest sense, a definition which would embrace natural gas, although their secondary and limited definition would not. . . . We find that natural gas is a crude mineral, and sustain the claim that it is exempt from duty."

When the case reached the Federal Court, this court says in the above-cited decision:

"The court sees no reason to disturb this decision. Indeed, it is probable that were the issue to be decided here de novo a similar conclusion would be reached. . . . The decision of the board should be affirmed."

In the case of *Batterson* vs. *Magone*, 48 Fed., 289, the question arose in regard to Mexican onyx as to whether it was admissible free as onyx proper, which is the chalcedonic variety of quartz, or whether it was dutiable as a marble. On the trial a chemist was placed on the stand as a witness, who testified that he had analyzed the rock and that its composition was:

Carbonate of lime	95.56 per cent.
Carbonate of magnesia	2.32 per cent.
Anhydrous sulphate of lime	0.13 per cent.
Ferrous and ferric oxides	1.85 per cent.
Residue	0.14 per cent.

and that it was crystalline, composed of rhombohedral crystals. Under the instructions of the court, the decision of the case (which was a jury trial) was that it was dutiable as a marble.

In *Fisher et al.* vs. *United States*, 91 Fed., 759, the question arose whether Istrian stone or marble quarried ten miles from Trieste was dutiable as marble or at a lower rate under another classification.

This is the stone of which Venice is largely built, and if a marble is a coarse and cheap one; but the decision of the case was that it was dutiable as marble.

In *Marvel* vs. *Merritt*, 116 U. S., 11, the contention was whether iron ore should be classified as an unmanufactured metallic substance or under the terms, "mineral and bituminous substances in a crude state"; and the decision was, very correctly, that it came under the mineral classification.

A great many contests as to the classification of minerals under the custom laws do not come before the court but are decided by the Board of Appraisers, although there is an appeal provided to the courts. But in many instances this provision is not taken advantage of and the decision of the Board of Appraisers and in some cases of the secretary of the Treasury is final. These decisions are printed in a series entitled Treasury Decisions and published by the Government, the decisions being numbered consecutively. This series is hereinafter cited T. D., and an abstract is given of the most important decision directly concerning minerals.

Among the most important and interesting of these decisions are those relating to zinc ores. The Act of 1897 admits "calamine" free of duty, and the question has been raised a number of times as to what minerals were included under the term calamine. The Government contended that it included only the silicate of zinc. The decision of the Board, however, was that the commercial term calamine included the carbonate of zinc and that both were entitled to free entry as calamine, while the sulphide of zinc was entitled to free entry as a crude mineral.[32]

The Government sought a reversal of this ruling and the question was raised again before the Board and the question elaborately argued. The board in its decision [33] gives a full discussion of the nomenclature of the zinc ores and a long list of authorities on the subject, but adhere to their former decision that calamine includes both the carbonate and the silicates (hydrous and non-hydrous) of zinc. They also hold in this decision that the sulphide is entitled to free entry as a crude mineral even though the larger pieces of the ore have been broken up and some rock and dirt removed for convenience and economy in transportation.

In another case a similar question was before the Board in relation to copper ore which had been concentrated. It was held that the process of concentration by the removal of gangue and waste material did not remove it from the category of copper or render it liable to duty, but that it was entitled to free entry.[34] The question as to whether copper matte is entitled to free entry under the designation, "copper, regulus of," has been raised a number of times and the decisions have been uniformly in the affirmative.[35]

Barytes, or barium sulphate, is entitled to entry at 75 cents per ton of 2240 lb., although it has been concentrated and separated from the rock with which it is found mixed by jigging, instead of bearing duty at the higher rate on the manufactured article.[36]

The decisions on the question of the dutiability of industrial diamonds do not seem very consistent. The law provides that the rough stones shall be admitted free. In one case, however,

[32] T. D. 26,355; T. D. 27,937 (Ab. Nos. 14,437 and 14,438); T. D. 27,099.
[33] T. D. 27,891.
[34] T. D. 25,804.
[35] T. D. 23,656; T. D. 21,291.
[36] T. D. 25,241.

it was held that where the stones were split or broken that they were dutiable at 10 per cent. ad valorem as being "advanced" in condition from their natural state.[37] But in other instances it was held that black diamonds or "bort," with holes drilled through them for use in wire drawing, were entitled to free entry.[38]

The decisions likewise seem inconsistent as to the dutiability of crushed or ground marble. In a number of instances this has been held dutiable as a manufactured article,[39] or as "waste not specially provided for."[40] On the other hand it has been held that crushed marble known as "granito" and used, when mixed with cement, to make a flooring called "terrattzo" is entitled to entry free. "Granito" is made from waste lying around marble quarries in Italy, which is put through a crusher and screened.[41] Also crushed limestone,[42] "limestone chips"[43] and pulverized "Kalk" or "Vienna lime"[44] are all entitled to free entry. Marble in blocks or slabs of the quality known as "breccia" is also entitled to free entry under par. 508, Act of 1897.[45]

Gypsum in large blocks, ranging in value from $15 to $30 per ton, suitable parts of which are converted into mantel ornaments, but the larger part of which is manufactured into paint, is dutiable as crude gypsum at 50 cents per ton, and not at 12 cents per cubic foot as building or ornamental stone.[46]

A mineral salt obtained from natural mineral water by evaporation of the same without any addition whatever, and invoiced as "mutterlangen salz," was held to be free of duty as a crude mineral.[47]

An interesting question arose in relation to cryolite. The mineral is on the free list. Artificial cryolite was imported, "made in Germany" by a synthetic process and having the same uses and properties as the mineral found in nature, except that it was amorphous instead of crystalline like the natural mineral. It was held, following a decision of the United States Supreme Court in relation to another substance, that the artifical substance is included within the unqualified name of the substance,

[37] T. D. 27,809.
[38] T. D. 26,534; T. D. 25,565: *United States* vs. *Fifteen Drilled Diamonds*, 127 Fed., 753.
[39] T. D. 27,801 (Ab. 13,987).
[40] T. D. 25,032; T. D. 27,801 (Ab. 13,987).
[41] T. D. 25,867 (Ab. 4001); T. D. 27,223 (Ab. 10,547).
[42] T. D. 27,572 (Ab. 12,634).
[43] T. D. 26,655 (Ab. 7773).
[44] T. D. 25,665 (Ab. 3037).
[45] T. D. 23,647.
[46] T. D. 26,513.
[47] T. D. 27,674 (Ab. 13,146).

and hence artificial cryolite was entitled to free entry, being included in the unqualified name cryolite used in the statute.[48]

Base bullion containing lead, gold, and silver is entitled to entry upon payment of duty at three-fourths cent a pound on the lead contained therein according to sample and assay.[49]

Sulphide of antimony is entitled to free entry.[50]

Cerium ore consisting of a mixture of the silicates and oxides of cerium, didymium and lanthanum is entitled to free entry as a crude mineral.[51]

Articles of jade (vases, etc.) are dutiable as articles composed of mineral substances and not as precious stones.[52]

Ground talc or French chalk is dutiable as a mineral substance (p. 97, Act 1897).[53]

Sapphire meter jewels or compass centers are classified as mineral substances at 25 per cent. ad valorem (p. 97, Act 1897) and not as precious stones.[54]

Imitation pumice stone and scouring bricks are dutiable as mineral substance.[55]

Molybdenite is dutiable as a metallic mineral substance.[56]

"Putz pomade" is dutiable as an article composed wholly or in chief part of mineral substance.[57]

Gravel bought as ballast is entitled to free entry as crude mineral.[58]

Caen stone sweepings from a marble or a stone yard are free as crude mineral.[59]

Lime rock (rubble) is entitled to free entry as an unenumerated crude mineral.[60]

Articles made of "tiger-eye" are classified as minerals and not as precious stones.[61]

Artificial teeth are dutiable as articles of mineral substance under par. 97, Act 1897.[62]

Electric light carbons are classified as "mineral substance."[63]

[48] T. D. 24,990; *Cochrane* vs. *Badische Anilin and Soda Fabrik*, 111 U. S., 293.
[49] T. D. 23,852; *In re* Guggenheim Smelting Co., 112 Fed., 517.
[50] T. D. 23,653; T. D. 23,691; *McKisson & Robbins* vs. *United States*, 113 Fed., 996.
[51] T. D. 20,245.
[52] Tiffany *vs.* U. S., 126 Fed., 255; T. D. 19,806.
[53] T. D., 19,596, and 19,660.
[54] T. D. 23,727.
[55] T. D. 22,682.
[56] T. D. 18,849.
[57] T. D. 20,287.
[58] T. D. 25,627; T. D. 25,627.
[59] T. D. 24,988.
[60] T. D. 16,172.
[61] T. D. 25,083.
[62] T. D. 22,350.
[63] T. D. 20,579; C. C. A. N. Y., Dec. 12, 1898.

Actinolite is dutiable at 20 per cent. ad valorem and is not the same as asbestos.[64]

Apatite is free under the Act of 1895, p. 500, for use as manure.[65] This is true even if the apatite is ground. Grinding does not remove it from the free list.[66]

Siliceous stone is a mineral substance and when ground is "advanced in value or condition" and dutiable, and not free as sand.[67]

Cornish stone was found to be a variety of feldspar and held not dutiable, being a crude mineral.[68]

Talc is non-dutiable as a crude mineral and does not come under the classification of French chalk.[69]

Earth composed of oxide of iron, silica, alumina, and lime used as a polishing powder is dutiable as an "earth manufactured" at $3 per ton.[70]

Asphaltum is non-dutiable, coming under the classification of a crude mineral.[71] By a curious later decision, however, it was held that asphaltum "sundried in the bed" is dutiable at $3 per ton, on the ground that it was "advanced in value or condition" by refining or "other process of manufacture."[72] Exposure "in the bed," to the rays of the sun would appear to be a remarkably simple process to be termed a "refining" or "process of manufacture." This decision seems highly inconsistent with the other decisions noted herein, in which picking gangue and waste out of blende, concentrating copper ore and removal of waste rock from barytes by jigging, are held not to "advance" the condition of such ores so as to make them dutiable.

Under the last subdivision of this subject no further summary is possible than the enumeration and digest of the decisions given herein; for each decision being the interpretation by a court or other proper authority as to what is included under the term mineral, mineral load, crude mineral, etc., as used in the statutes cited, the case of each particular substance must be decided by the facts relating to such substance, so that the precedent of any case does not go farther than the substance passed upon or those so similar as to be practically identical. It may be noted, however, that in all the subdivisions of the subject the cases show an

[64] T. D. 16,013.
[65] T. D. 16,097.
[66] T. D. 21,857.
[67] T. D. 15,701 (1895).
[68] T. D. 11,240 (1891).
[69] T. D. 12,240 (1892.)
[70] T. D. 10,784.
[71] T D. 12,817.
[72] T. D. 23,206.

increasing tendency of the courts and other authorities to call for and rely on the expert testimony of scientific men — chemists, engineers, and geologists — for aid in deciding the important cases that arise under this subject. As the quotations given above from the early cases indicate, there then existed a marked tendency in the courts to make some supposed understanding of the "mass of mankind" the basis of decisions on these questions, usually with unsatisfactory results, while later decisions arrived at by the aid of competent scientific testimony have stood and become reliable precedents.

V

Theories of ore formation; historical outline; views held by the authorities at the present day; classification of ore deposits; the planetesimal hypothesis and ore deposits.

Theories of Ore Formation

THE problem of the sources of the accumulation of metalliferous minerals in masses of such richness that they can be profitably mined is one which, from the earliest times, has attracted the attention of practical miners and geologists. It is of great inherent interest, not only on account of the intricate scientific theories involved, but also because of the practical utility of a correct understanding of the genesis of ore deposits as an aid to discovery and exploitation. These theories are often more or less directly involved in the disputed questions of mining litigation and may control the decision of the case.

In the case of *Bullion Beck & Champion* vs. *Eureka Hill Co.*,[1] the following quotation by the court, from the testimony of one of the experts in the case, shows how such theories may be taken into account:

"My general conclusions are: First, that the eruption of the vast body of trachyte or porphyry, immediately east of Eureka Hill ore-bearing zone, was the primal cause of the fissuring, crushing, and buckling of the lime beds; Second, that the heat evolved by this immense mass of volcanic rock, was an active agent in driving the hot gases and mineralized solutions up through the broken and fissured zone of limestone, now known as the Eureka Hill Lode or Ore Zone. . . . Fourth, that the whole zone of ore deposits shows beyond a possibility of a doubt that the ore and quartz was deposited by chemical solutions and substitution, mainly of quartz and ore in the place of the lime dissolved out, instead of the filling of open fissures or other cavities made by the eruption."

Also in the case of *Iron Mine* vs. *Loella Mine*,[2] the court says:

"We come next to the position assumed by the defendants, to the effect

[1] 11 Pacific, 515 (526).

[2] 2 McCrary, 121 (127), 3 Fed., 368.

that the lode is continuous from side to side of plaintiff's location, and that the part which plaintiffs claim to be a top or apex is only an upward swell, ridge, or high point in the vein from which it descends in both directions. In support of that view evidence has been given to the effect that the ore was deposited after the tracts had come to their present position, the deposition proceeding practically at the same time and by the same agencies on the upper and eastern face of the limestone, and upon the western face of the limestone as well. . . . According to that theory the ore was deposited on the eastern and western slopes of the limestone by the same forces and in the same way and at about the same time. . . . And if it is continuous, as suggested, . . . the plaintiff cannot follow it beyond the lines of its location."

The subject is of such importance that I will give a few paragraphs briefly recapitulating the older theories of deposition that have prevailed from time to time, and will continue with a somewhat detailed statement of the modern views regarding the concentration of minerals in ore-bodies; for only present-day ideas weigh with the courts in current litigation. I will conclude with a scheme of classification which is the logical outcome and summary of such investigations and theories.

The first theory of ore deposition worthy of the name was that of Werner (1750–1817), a professor in the Freiberg Mining Academy; and it was a part of his general geological doctrine, known as the Neptunian theory. According to his ideas, the whole globe was once surrounded by an ocean of water at least as deep as the mountains are high. He believed that such rocks as granite, gneiss, basalt, porphyry, schist, limestone, etc., had been precipitated from solution in this universal ocean during the earliest "chaotic" periods by chemical agency. These were followed by "transition" rocks such as graywacke, clay-slate, crystalline schist, gypsum, etc., due to both chemical and mechanical agencies, and, at the end, succeeded by rocks that were wholly mechanical deposits such as sandstone and alluvial formations.

Since all these rock formations were deposited from the water, he naturally attributed the filling of the fissures in such rocks to the same source. He says:

"We are also convinced that the solid mass of our globe has been produced by a series of precipitations formed in succession (in the humid way); that the pressure of the materials thus accumulated was not the same throughout the whole, and that this difference of pressure and several other concur-

ring causes have produced rents in the substance of the earth, chiefly in the more elevated parts of its surface. We are also persuaded that the precipitates taking place from the universal water must have entered the open fissures which the water covered. . . . that part of it which was confined to the fissures was undisturbed and deposited in a state of tranquillity its precipitate." [3]

Werner's ideas as to ore deposits are commonly known as the "descension theory." He was, perhaps, the leading teacher of geology of his day and exercised great influence; so that, although "wholly irrational," his theory long predominated in geology.

In 1839 Sir Henry de la Bêche (1796–1855) published his "Report on the Geology of Cornwall, Devon, and Somerset," in which he concludes that the fissure veins (the only ore deposits of those counties) were the result of the filling of fissures in rocks by chemical deposits of substances held in solution in water which circulated in the fissures, and that this deposition was largely due to electro-chemical agency.

Among the French geologists, Élie de Beaumont (1798–1874), of the Paris School of Mines, proposed, in 1847, as a theory to account for ore deposits in veins, that the ultimate sources of such minerals are in the eruptive rocks, from which they emanate in the gaseous form, and as they pass out, through canals and fissures, they condense at greater or less distances and thus form ore deposits. The metals in veins are most often combined with certain elements such as: sulphur, selenium, arsenic, antimony, bromine, iodine, etc., called "mineralizers," which have the property of rendering the resulting compound volatile. These minerals, in the gaseous form, are also often taken up and absorbed by water and deposited from aqueous solution in the fissures; the water descending from the surface and rising again after becoming charged with mineral or being charged therewith on the upper journey. But this theory cannot possibly account for the gangue minerals which are mostly non-volatile.

Von Cotta (1808–1879), professor of geology in the Mining School of Freiberg, published in 1859 a text-book on ore deposits which was translated into English by Prime in 1869. He gives a fair account of the various theories of ore deposits, and, while proposing no new theory of his own, appears to lean to the idea

[3] *Neue Theorie von der Entstehung der Gängen*, chap. vii, sec. 68 (1791); quoted in Geikie's "Founders of Geology," p. 115.

of deposition from solution in heated waters. This work was perhaps the leading authority on the subject of ore deposits during the mining litigation of the last quarter of the nineteenth century, and is frequently mentioned in the reports of the courts in mining cases. Consequently it is still of much value, as showing the conceptions of ore deposits and kindred subjects that were in the minds of the experts who testified in these cases and thus influenced the courts in their decisions of cases involving geological conceptions. For example, in the Eureka case the court says:

"The definition of a lode is, that of a fissure in the earth's crust filled with mineral matter, or more accurately as aggregations of mineral matter containing ores in fissures. See Von Cotta, 'Treatise on Ore Deposits,' Prime's translation, p. 26."

Another theory, especially advocated about 1873 by Sandberger (1826–1898), was that of "lateral secretion." It assumes that the vein minerals were originally contained in the wall rock, and were leached out by waters circulating from the walls into the fissures, where the solutions were relieved of their dissolved minerals as the result of different physical and chemical conditions there prevailing.

Le Conte's (1823–1901) theory belongs to this period. His argument was that the contents of mineral veins seem to have been deposited from hot alkaline solutions ascending through fissures. As to the vein matter, he states that deposition from solution is proved by the fact that vein quartz has a specific gravity of 2.6, which is true only of quartz formed in the "humid" way. Silica produced in the "dry" way has only a specific gravity of 2.2. The waters are heated because they come from fissures which extend to great depths where the rocks are hot. The heat and the pressure greatly increase the solvent power of the water. But, if the "vein-stuffs" have been deposited from solution, then the mineral ores which are so intimately associated with the other vein contents must have been deposited by the same agency. He does not make an explicit statement concerning the source of the water, but it may be fairly presumed that he supposes it to be of meteoric origin; so that, in brief, his theory is: deposition in fissures, etc., from solution in alkaline meteoric waters heated during descent in fissures, etc., to great depths in the earth's crust by the regular increase of heat that occurs as depth is gained.

Each of these, as well as other less notable theories of the cause of ore deposition, contained some germ of truth except, perhaps, the "wholly irrational" ideas of Werner; but want of space forbids any detailed discussion of them. The valuable parts of each are embodied in the theories of ore deposits now held by modern geologists as the result of a century and a half of investigation. Except as to certain subordinate details, they are matters substantially agreed upon by scientific investigators of such subjects, and are entitled to rank with other scientific principles as representing truthfully the causal and other relations existing in nature. They furnish, likewise, valuable aid to the practical operations of mining.

During the latter quarter of the past century the development of the science of geology was greatly promoted by the geological surveys in the United States, both by the individual States and by the National Government as well as by similar surveys maintained by many foreign governments. By these agencies large numbers of facts regarding ore deposits have gradually accumulated; and these have greatly contributed to the creation of theories of ore deposits resting on reasonable and scientific grounds.

Near the close of the century (1893) Pŏsepnéy (?–1895), professor of mining geology in the School of Mines at Přibram, Bohemia, in a paper read before the American Institute of Mining Engineers at their meeting at the Columbian Exposition at Chicago, proposed a theory of great value, which stimulated renewed discussion and investigation of the subject, advancing our knowledge greatly. His fundamental conception was the division of the part of the earth's crust that contains water, which has descended into it from meteoric sources, into two zones: (1) The *vadose* region, where the water is in active circulation through cracks, fissures, joints, permeable planes in bedded rocks, interstitial spaces, etc. (2) The *ground-water* region, where the water contained in the rocks is comparatively quiet. He believed minerals to be brought up in solution by the ground waters, from the depths, or barysphere, and deposited above in fissures, etc., as veins. Here during geological mutations they were oxidized, altered, rearranged, concentrated, etc., by the action of the waters of the upper or vadose circulation. He was of opinion that by the latter agency a large part, perhaps the larger part, of the

workable ore deposits have been concentrated from bodies, which, as originally precipitated from ascending ground waters, were too lean to be profitable. This latter part of his theory has withstood all the discussion and investigation it has since aroused; and it now forms an integral part of modern theories of ore deposits.

In the same year Vogt, of Norway, presented the idea of *magmatic segregation* to account for the direct formation of titaniferous iron ores and certain other ore-bodies from molten rock-magmas. He also accounted for a large part of the remaining kind of ore-deposits as being formed by the combined action of water and gases following an igneous eruption, this action being

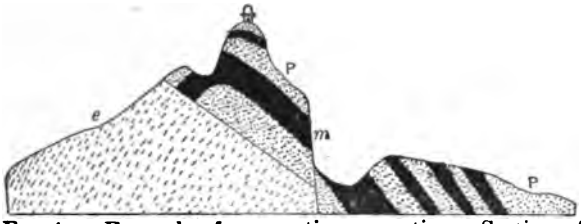


FIG. 4. — Example of magmatic segregation. Section of Goroblagodat iron deposit, Siberia. *P*, orthoclase porphyry; *m*, magnetic iron ore; *e*, epidote garnet rock. From Beck; Nature of Ore Deposits, after Vogt.

termed "pneumatolysis." His conception differs from de Beaumont's in that, instead of considering the molten masses to be drawn from a molten interior, he thinks they are derived from the solid crust and are the result of localized eruptive action within that crust. The conclusion follows because terrestrial physics has disproved the idea of a mobile, molten interior of the earth.

This brings us to the views held by geologists at the present time, according to which ore deposits are believed to have been formed in the following ways:

I. During the cooling of fused masses, or magmas, a process of segregation of the different minerals composing them has gone on by which concentrations rich enough in metals to be classed as ore-bodies have been formed, usually in the exterior part of such magmas. The examples of this class are titaniferous iron ores, chromite, and probably certain copper and nickel ores. There is general agreement among geologists as to the fact that these deposits have been formed by segregation from fused rock-

masses, but there is still much discussion of a highly technical character as to what natural forces have operated to produce such segregation. These, however, are not of practical importance, and I shall not attempt to state the various arguments.

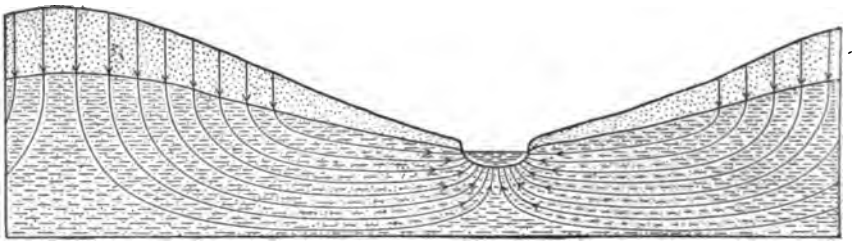


FIG. 5. — Relation of level of ground water to topography and to surface drainage. Lines with arrows are lines of flow.
From Van Hise's treatise on metamorphism; professional paper No. 47, U. S. G. S.

II. Another mode of formation has been by deposition from water as members of a sedimentary series, either (1) as chemical precipitates, such as the Clinton iron ores of the eastern United States, or (2) mechanical deposits, such as the placer gravels containing metallic gold or cassiterite.

III. A further method, which accounts for the formation of most of the economically important deposits, has been by the solution of the mineral in water and its subsequent redeposition either (1) in preëxisting cavities in the rocks (fissures, interstitial spaces between the grains, contact planes, caverns from solution, etc.) or (2) by a replacement or chemical exchange by which the rock in contact with the mineral solution was dissolved and carried away by the water, while in its place some mineral or minerals were deposited from the solution.

There is substantial agreement among all modern geologists as to water being the agent concerned in the production of this class of ore deposits; but there is still a marked divergence of opinion as to the source of this water and the conditions under which it has done the work. Two theories are held. One is, that such part of the meteoric, or rain, water, as sinks into the rocks is the agent which accomplishes the work of making ore deposits. This water is believed to descend to great depths and to be in slow but continual movement or circulation through the mass of the rock itself as well as along the cracks, crevices, and

faults which exist in all rocks. This water dissolves the minerals out of the rocks with or without the aid of heat, ascends along fissures, etc., to the surface, and deposits the dissolved minerals in veins and other forms of ore-bodies.

In Chamberlin & Salisburys' recent text-book on geology, the theory of ore concentration by the circulation of meteoric waters is upheld. They say:[4]

"There are other occasional methods, but the chief process of concentration, immeasurably surpassing all others, consists in leaching out the ores disseminated through the country rock, and their redeposition in segregated form, as an incident of the recognized system of water circulation."

In the form here stated, this theory is made highly improbable, by the fact that, though all the materials necessary for vein formation — silica, iron, calcium carbonate, sulphur compounds, etc. — are everywhere present, as well as fissures in the rocks through which the water circulates, still it is only in exceptional cases and in limited areas that vein formation and the creation of ore-bodies has occurred. These exceptional cases and limited areas are nearly always related to igneous activity and its products.

The most prominent advocate of this theory is C. R. van Hise. His fundamental conception is that the earth's crust is divided into three zones: (1) A zone of fracture extending to a depth of 1625 to 32,500 ft., according to the strength of the different kinds of rocks in which such fractures may be formed. If fractures are produced in this zone by dynamic causes they will remain open and form passageways for mineral solutions. (2) A zone of combined fracture and flowage. (3) A zone of flowage where the pressure is such that no open fractures can exist; for the rock will flow under the dynamic forces instead of fracturing. Consequently, water cannot penetrate into this zone, but can only enter the first and second. He holds that meteoric waters from the surface descend into the fractures of the first and second zones, percolate through and dissolve out the minerals from the rocks, and, ascending along other fissures toward the surface, deposit these dissolved minerals as veins and other ore-bodies. He admits that this circulation may, in some instances, be accelerated by the heat derived from igneous intrusions, but he seems to consider that the greater part of mineral deposits has been

[4] Vol. i, p. 453.

formed by the action of ordinary circulating meteoric waters. It would be outside the scope of this treatise to state in detail the arguments for and against the truth of this theory. It is quite generally admitted by geologists to be the most rational explanation of many deposits of iron ore, particularly those of

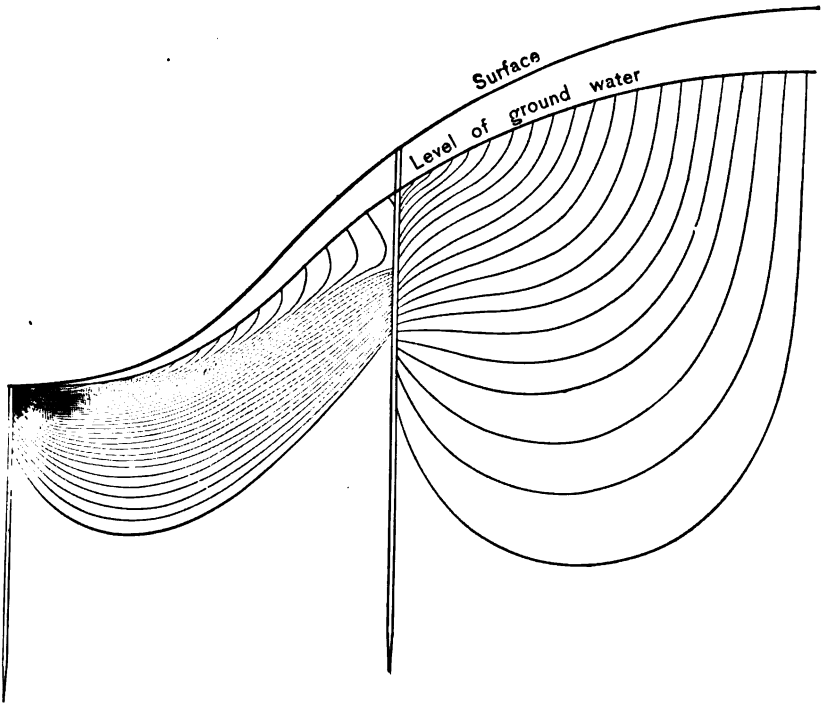


FIG. 6.—Ideal vertical section of the flow of water entering at a number of points on a slope and passing to a valley below through a homogenous medium interrupted by two open vertical channels, one on the slope and one in the valley.

From Van Hise's treatise on metamorphism; professional paper No. 47, U. S. G. S.

the Lake Superior region, and possibly some copper deposits; but a majority of modern geologists now believe that ore-bodies other than the iron deposits have been formed by waters derived from a different source and acting under different conditions from those assumed in the above theory.

The second theory, which is held by Kemp, Weed, Spurr, Lindgren, Vogt, James D. Geikie, Sir Archibald Geikie, and others, is that, excepting iron ores and possibly some lead and copper

ores, ore deposition is genetically connected with igneous and volcanic action and the vast masses of molten rock-matter raised by such action from great depths in the earth's crust. Meteoric water may descend from the surface, through fissures, etc., and, coming in contact with the molten rock-mass, or passing through solid rock highly heated by such igneous action, dissolve by the aid of the heat large quantities of mineral matter, and then, being forced by the heat or other cause to ascend toward the surface, will deposit most of the dissolved mineral matter in the fissures or cavities through which it ascends. This process long continued gives large mineral deposits.

But these authorities hold further that, in addition to such meteoric waters mineralized by contact with heated masses of igneous rocks, there is another and more important source of mineral-bearing water. This is water contained in the fused rock-masses themselves, as one of their original constituents, from "the foundation of the world." As these masses approach the surface as the result of earth movements, orginating in volcanic activity, and the conditions of pressure, temperature, etc., are lowered, the rock-mass is no longer able to contain this magmatic water, and it bursts upward to the surface through the fissures caused by volcanic action. Magmatic water is also released from the rock-masses during the process of crystallization of the rock-forming minerals composing the same. This magmatic water in the fused [5] rock-masses at great depths is under enormous pressure and at a temperature which must exceed the critical point (360 degrees C.) of water. Under such conditions it acts as a true gas and has enormous powers of solution. Experiments show that under such conditions glass and other silicates are dissolved with great ease, and crystallize out again on cooling. Of course, under the above conditions the magmatic water is saturated with the more soluble constituents of the rock-masses; but, as the pressure and temperature are lowered, or because chemical action is instituted by the wall rock, etc., as the surface is neared, the water will deposit most of its dissolved mineral matter along the channels in the rocks through which it rises, and will form veins, replacement deposits, impregnations, etc.

[5] Such water is usually termed "juvenile" water by European writers, because it is "young" or recently brought forth from the interior of the earth, but the term "magmatic," used by American writers seems more appropriate.

Very briefly stated, the arguments in favor of this, at first sight, rather startling theory, are:

(1) Nearly all deep mines are dry on the lower levels. As deep shafts are sunk they penetrate the water-bearing zone in their upper portions and pass through it, so that the water can usually be impounded in the upper levels, and the lower levels are not troubled with water at all. Such deep mines as have water at the bottom are usually found to be in regions of expiring vulcanism.

(2) Nearly all ore deposits occur in regions of igneous activity; and the geological period of deposition, when this is ascertainable, is usually found to agree closely with the expiring periods of such activity. Lindgren shows that for long periods vein formation was rare or absent, but became very active following igneous outbreaks. Fracturing occurs in districts without eruptive rocks, or in old and cooled eruptives; but in these are found no extensive vein formation. Meteoric waters and vein material, silica, lime, iron, sulphur, etc., are everywhere present; and, if these are all that is necessary, vein formation should have occurred everywhere and throughout all the geologic periods with some approach to uniformity.

(3) It is well known that during the eruption of volcanoes enormous quantities of steam are given off.[6] This is the agent that carries the fine volcanic ash that forms such a noticeable feature of many eruptions into the atmosphere and distributes it. It is true that the presence of steam at volcanic eruptions has been accounted for by supposing that water from the ocean or some other source had come into contact with the heated masses of the rock in large quantities. But when we remember that, in order to gain access to such heated rock-masses, the surface water must approach them through interstitial cavities in the rock or chance fissures, such a source for eruptive steam would seem impossible; for, as soon as the first portion of water came into the zone of heat it would be converted into steam and would drive back the water behind so that enough water to produce a

[6] From the nature of the case, it is almost impossible to even estimate the amount of water given off from volcanoes during eruptions. Chamberlin and Salisbury, Geology, vol. i, p. 635, give the following: "M. Foqué estimated that the discharge of steam from a merely *parasitic cone* of Etna during 100 days was equal to 2,100,000 cubic meters of water." Though, as above noted, these writers believe that ore deposits are chiefly formed by meteoric waters they nevertheless endorse the view that the waters given off from volcanoes is not meteoric in origin. They say: "The balance of present evidence seems to us to favor the view that most of the steam and other gases come with the lava from its original source deep in the earth." Vol. i, p 636. See also note on p. 90.

volcanic eruption could never come into contact at one time with the heated rocks. After the first outburst of volcanic activity, the magmatic waters are not explosively converted into steam but are given off as steam jets, fumaroles, geysers, and hot springs, such as are now in operation in the Yellowstone Park. It is during the latter stage that ore deposits are formed. At Steamboat Springs in Nevada, only a few miles distant from the great Comstock Lode, the hot waters are now bringing metallic minerals up in solution and depositing them near the surface, making true ore deposits on a small scale.[7] Also, in the region of Carlsbad in Bohemia, Professor Suess of Vienna has shown that there is no relation between the rainfall and the outflow of water from the hot springs of that vicinity. He believes that the water supply of these springs is derived from magmatic instead of meteoric sources.[8]

In his latest work James D. Geikie, the noted Scotch geologist, gives his endorsement to the theory that magmatic waters are the chief agent in forming ore deposits. He says:

"It is not necessary, however, to suppose that the water coming from plutonic depths is of meteoric origin. Indeed, such evidence as we have would lead us to believe that surface-water, in the paucity or absence of open fissures, does not usually penetrate much below 2000 feet. It is the experience of miners in all parts of the world, that deep mines are generally dry and sometimes even dusty. Yet we know that when open fissures in such mines are tapped they not infrequently yield heated alkaline water. It is quite possible that this water may originally have descended from the surface, but, on the other hand, it may have come from plutonic sources. For, as we have seen, all molten rocks contain vast volumes of water-vapor and gases — to the action of which the pneumatolytic phenomena associated with batholiths are obviously due. According to the theory of ascension, therefore, the chief agent in the formation of secretionary ore-formations is probably the heated waters given off by plutonic masses. Not only would these waters (usually alkaline) carry with them mineral solutions derived from the molten magma, but as they continued to ascend they would attack the rocks through which they passed. Finding their way upwards through open fissures of all kinds, they would at the same time insinuate themselves into the narrowest and closest crevices, and permeate the pores and capillaries of the rocks themselves. The various mineral constituents of the rocks would thus become altered, and substances which are practically insoluble at the earth's surface would be taken up." [9]

[7] Kemp: Ore Deposits, pp. 30, 44.

[8] *Naturwissenschaftliche Rundschau*, Nov. 13, 1902, p. 585.

[9] James D. Geikie, "Structural and Field Geology," 1905, p. 266.

In whatever way the ore deposits may have been formed originally, they have been subjected to the action of descending water in the vadose region, which has redissolved the ore in the higher portions of the deposit and carried it down and reprecipitated it in the lower portions of such deposits, thereby enriching the same, often to such an extent as to convert a deposit too poor to be profitably worked into one that can be. This process is known as *secondary enrichment*, and is of great importance in connection with mining. It explains why so many mines, particularly of copper and the precious metals, are found to have rich and profitable deposits near the surface and down to the level of the permanent ground water, while below this they change to lean sulphides that cannot be profitably extracted. The process of secondary enrichment does not always cease at the ground-water level, but sometimes extends to a considerable distance, even hundreds of feet, below this.[9a]

Classification of Ore Deposits

As the result of the study of ore deposits as outlined above, and the general acceptance of a rational theory thereof, it has become possible to make a logical classification of the same based on their origin or genesis. Previously the classification of ore deposits was made either on the form of the deposit or on its contents. As an example of this kind, I give the following, made by Dr. R. W. Raymond, Commissioner of Mining Statistics for the Treasury Department [10]:

A. *Superficial deposits.*
   1. Deposits of débris.
   2. Surface formations in place.

B. *Inclosed deposits.*
   1. Sheet or tabular deposits.
      (*a*) Lodes.
      (*b*) Veins and seams.
   2. Mass deposits.
      (*a*) Masses.
      (*b*) Impregnations.

[9a] An excee lingly interesting and instructive article on "Ore Deposition and Physical Conditions" was read by Waldemar I indgren before the Mexican meeting of the International Geological Congress, September, 1906; reprinted in *Economic Geology*, vol. ii, p. 105. It describes the different minerals, etc., formed under varying conditions of depth, pressure, temperature, etc. From these facts important practical inferences as to depth a deposit is likely to continue, etc., may be reasonably made.

[10] *Report* on the Mineral Resources, etc., for 1870, p. 448.

3. Other irregular deposits.
   (*a*) Pockets, etc., distributed in other deposits.
   (*b*) Isolated segregations, gash veins, etc.

This classification is of especial interest because it may be fairly taken to represent the ideas that prevailed concerning ore deposits about the time of the enactment of National legislation on this subject (1866 and 1872), and was therefore the basis to some extent of such part of these statutes as refer to geological features of ore deposit.

A genetic classification (one based on the source or origin of the deposits) was first proposed by Professor J. F. Kemp of Columbia University. His is the simplest and most practical based on genetic considerations, and is given below.[11] Except in fundamentals, admitted by all, it avoids the hypothetical and fixes attention upon the place and cause of precipitation. This structural feature is the one most important for the miner.

GENETIC CLASSIFICATION OF ORE DEPOSITS

I. *Of Igneous Origin.* Excessively basic developments of fused and cooling magmas. Peridotite, titaniferous magnetite, gabbros (Minnesota, Adirondacks, Sweden, and Norway), nickeliferous pyrrhotite, chromite, corundum.

II. *Deposited from Solution.*
   1. Surface precipitation, often forming beds.
   2. Disseminations (impregnations) in particular beds or sheets, because of
      (*a*) Selective porosity.
      (*b*) Selective precipitation by calcareous matter.
   3. Filling joints caused by cooling, drying, or dynamic processes.
   4. Occupying chambers (caves) in limestone.
   5. Occupying collapsed (brecciated) beds, caused by solution and removal of support, or from dolomitization of limestone. Occupying cavities at monoclinal bends, anticlinal summits (saddle reefs), synclinal troughs, often with replacement of walls.
   6. Occupying shear-zones or dynamically crushed strips along faults whose displacement may be slight.
   7. True veins filling an extended fissure, usually produced by faulting, and often provided with lateral enlargements.
   8. Occupying volcanic necks, in agglomerates.
   9. Replacements in troughs of some impervious rock or rocks.
   10. Contact deposits. Igneous rocks always form one wall.
   11. Segregations formed in the alteration of igneous rock.

III. *Deposited from Suspension. Residual Deposits.*

[11] *School of Mines Quarterly*, Nov., 1892; J. F. Kemp, "Ore Deposits." p. 56.

1. Metalliferous sands and gravels, whether now on the surface (placers, magnetite beach sands), or subsequently buried (deep gravels).
2. Residual concentrations, left by the weathering of the matrix. (Iron Mountain, Missouri, hematite in part.)

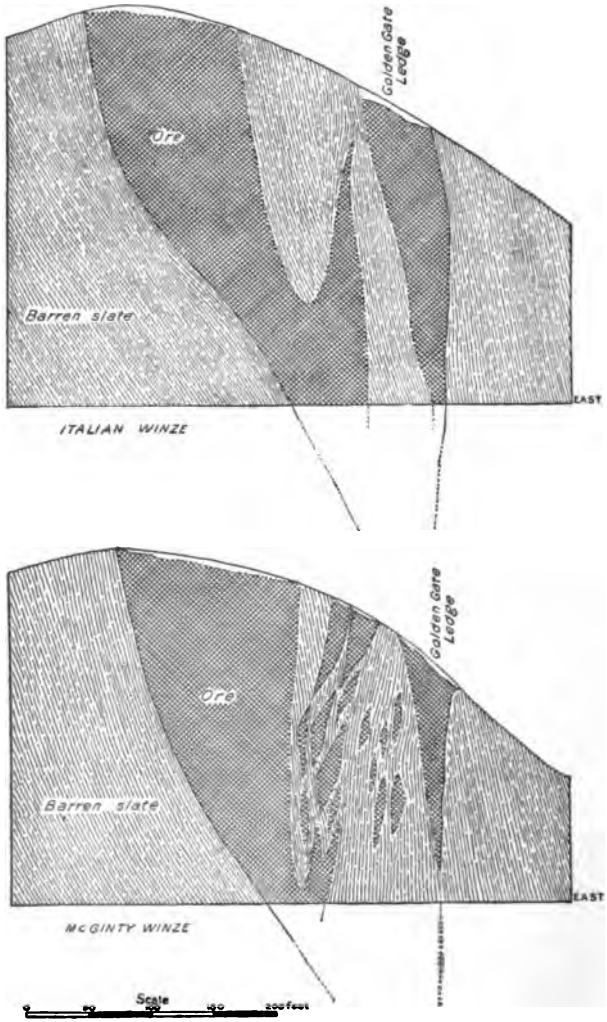


FIG. 7. — Section of ore-body, Father de Smet mine (Homestake Co.), Deadwood, S. D. An example of Class 2, of subdivision II of Kemps classification, disseminations in particular beds (in this instance in schists).

From professional paper No. 26, U. S. G. S.

Lenticular bodies of magnetite and pyrite in metamorphic rocks — schists, slates, and gneisses — also lenticular bodies of quartz in schistose or slaty rocks, are additional important forms of ore-bodies hard to account for satisfactorily. Professor Kemp suggests that the latter may be varieties of fissure veins pinched into lenticular shape by the pressure that caused the metamorphic condition of the rocks, or the filling of cavities originally lenticular, or the replacement of pinched beds of limestone. Possibly the magnetite lenses or "pods" were formed from beds of hematite iron ore by some similar action; but the idea is gaining ground that such pods were originally magmatic segregations and that their present shape is due to dynamic metamorphism.

Under subdivision 1 of class II there are no deposits of economic importance. The methods of deposition of the ore-bodies under the remaining subdivisions, except 9 and 11, have already been discussed in this chapter or will be in the chapter on the

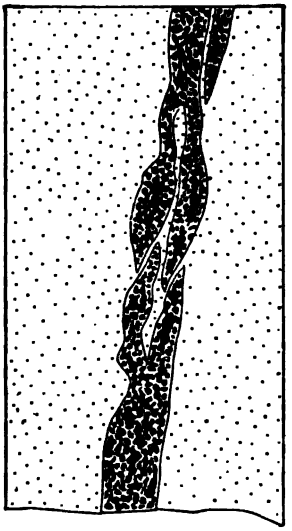


FIG. 8. — Section of a segregation band of chromiferous olivine rock in the saxonite of Varnafjeld.
From Beck; Nature of Ore Deposits.

general subject of veins. Subdivision 9 includes the immense iron ore deposits of the Lake Superior region. It is generally believed that these have been formed by downward moving,

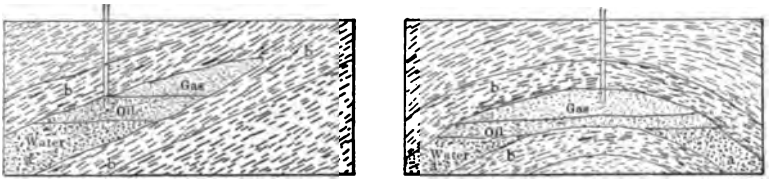
cold meteoric waters which have dissolved the iron mineral out of the overlying rocks — cherty carbonates, ferruginous slates, etc. These solutions, formed by the aid of carbonic acid in the meteoric waters, came to rest in impervious rock troughs, and probably met other solutions carrying oxygen by which the iron was precipitated as an iron oxide and the silica removed by alkaline or carbonated water. Under 11, chromite is practically the only example. It is found distributed in serpentinous rocks and is believed to be an alteration product in the same way that the serpentine itself is, namely, that, during the alteration of the original igneous rock to serpentine,, the chromite contained therein became concentrated in spots by a kind of segregation process.

Other genetic classifications of ore deposits have since been proposed. Two, presented in 1903 by W. H. Weed and J. E. Spurr, are highly valuable as detailed summaries of existing knowledge on the subject of ore formation, although they seem to be too complicated to be of great value from the miner's standpoint. They appeared in the Engineering and Mining Journal, and have been reprinted together with a series of discussions by noted authorities thereon, and with some additional essays, as a separate volume.[12] It also contains a very brief outline of a scheme of classification by Van Hise conforming to his ideas concerning ore deposition, outlined above. The volume forms a very suggestive and interesting collection which should be consulted by all especially interested in the question of ore deposits.

Besides the metalliferous deposits there are a number of non-metallic deposits which are exceedingly important from the industrial standpoint. The most prominent are: coal, petroleum and natural gas, salt, gypsum, sulphur, clays of various kinds, and phosphate deposits. Of these coal, salt, gypsum, the clays, and sulphur (of Louisiana) were deposited in beds as members of sedimentary series. Petroleum and natural gas are found in porous sedimentary rocks, either limestone or sandstone, and in all probability were derived from organic matter buried with other sedimentary strata (limestone, shale, etc.) beneath that in which they are found. By some process, analogous to dry distillation, but which takes place at low temperatures, the buried

[12] "Ore Deposits, — a discussion," New York, 1905.

organic matter has been transformed to petroleum and gas. Usually this has escaped into the atmosphere; and it is only in situations where such oil-bearing strata are overlaid by porous strata, and this, in turn, by an impervious formation having a



A B

FIG. 9. — Types of oil and gas reservoirs.

A, inclined bed of sandstone (*a*) sealed in by shales (*b*), but somewhere in communication with water under hydrostatic pressure.
B, sandstone bed (*a*) interstratified with impervious beds (*b*) and forming an arch or anticline, and somewhere in connection with water under hydrostatic pressure.

From Bulletin 238, U. S. G. S.

dome or inverted trough form (anticline), that these substances have been preserved. The legal consequences of the fluid and wandering nature of these substances is noted under the head of the legal definition of minerals.[13]

The problems of the origin and formation of the other non-metallic deposits are too complex for discussion here, particularly since there are no important legal questions directly connected therewith. The books mentioned in the Bibliography will afford full details to any one who desires further information on these subjects.

THE PLANETESIMAL HYPOTHESIS

A recent theory of general geology that has an important bearing on the theory of ore deposits is the planetesimal hypothesis of the formation of the solar system, proposed by Chamberlin & Salisbury in the second volume (1906) of their great work on geology. The statement made in their first volume as to the method of ore deposition, etc., has been commented upon above; but their untenable ideas on this special branch do not detract from the value and suggestiveness of the masterly exposition of their hypothesis in the later volume. This is entirely consistent with and even distinctly favorable to the magmatic water theory of the formation of ore deposits.

[13] See p. 28

In brief outline the planetesimal hypothesis is as follows: It postulates a body of gaseous or nebulous matter comprising that now included in the solar system but occupying much less space than the orbit of Uranus, the outermost of the planets. At some time in the history of this mass, it is supposed to have passed close by but not to have come into actual contact with

FIG. 10. — "The great nebula in Andromeda, seen, apparently, obliquely; the greatest of the spiral nebulæ. The nucleus is highly preponderant and spheroidal. . . . The spectrum is continuous, with some dark lines, implying that the central nucleus is akin to the sun. No parallax has been determined, but the distance is inferred to be great and the dimensions immense, as many small stars *appear* to be this side of the nebula. This nebula has sometimes been suspected to be in reality a stellar system outside our own. Two smaller spheroidal nebulæ are shown which may or may not be connected genetically with the great one. (Photo, by Ritchey, Yerkes Observatory.")
From Chamberlin and Salisbury's Geology.

another enormous stellar mass, probably much greater in size than the nebulous solar system. This close approach, by the immense attraction of gravitation of the other mass, produced

on the solar nebula two tremendous outflows or protuberances of the gaseous matter of the body; one extending toward the passing system; the other, diametrically opposite, like enormously magnified tides. These protuberances or arms were bent or turned, the one nearest, in the direction of the passing system as it proceeded on its way; the other, in the opposite direction. As the disturbing system passed further away into the depths

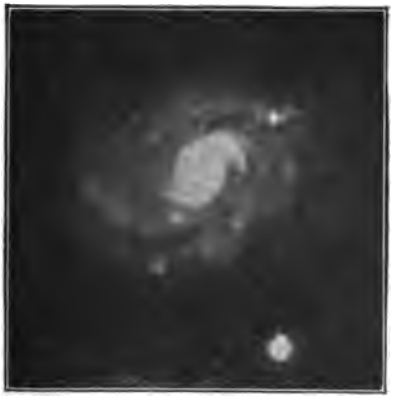


FIG. 11. — "A suggestive nebula in Ceti, Messier 77, in which the proportions between the apparent masses of the central and outlying parts is somewhat analogous to those assigned the solar nebula; so also are the proportions between the knots and the nebulous haze, and the number of the knots is also similar, but the volume of the central portion is disproportionately large. (Photo, from Lick Observatory.")

From Chamberlin and Salisbury's Geology.

of space these curved arms continued to revolve around the original body, forming a spiral nebula such as is shown in figure 10. Instead of only two arms, more may have been produced by successive outflows or expulsions during the various stages of the approach and recession of the passing system. The fact that the majority of the nebula found in the skies to-day have this spiral form is strong evidence in support of the hypothesis.

The further suppositions of the hypothesis are, that the matter

in these revolving spiral arms, originally gaseous, became cooled and ultimately formed innumerable separate masses of solid matter, varying widely in size, and revolving in elliptical orbits around the nucleal center. These are the *planetesimals*. At certain places on these arms, as shown in the photographs of existing nebulæ, aggregations or knots of matter collect, much smaller than the nucleus, but still of much greater size relatively than the vast majority of the planetesimals. These knots as they revolve, by virtue of the superior attraction of their greater mass, draw

FIG. 12. — "A typical spiral nebula in Piscium, Messier 74, with very symmetrical arms, pronounced nucleus and knots, and a relatively limited amount of nebulous haze. (Photo from Lick Observatory.")
From Chamberlin and Salisbury's Geology.

into themselves the smaller planetesimals one by one and thus build up the planets by a succession of additions of solid, relatively cold bodies, sweeping clean the space covered by the apsidal motion of their orbits. The total mass of all the planets and their satellites in the solar system is only $\frac{1}{700}$ that of the sun; so that the assumption, that these might have been drawn out by the gravitative attraction of some great passing stellar mass as vast gaseous protuberances does not seem unreasonable.

These planetesimals must have been made up of the same elements as the parent nucleus. We know by observation that the meteorites which fall from space upon the earth contain the same elements that are found in the earth's crust, and they prob-

ably have a similar or even common source with the earth. As we actually find to be the case with the meteorites, the planetesimals are supposed to have contained occluded gases, water vapor, etc. The impact of these falling bodies, the increase of gravitative pressure resulting from increase of the mass and other minor causes, produced great heat; not sufficient, it is believed, to render the mass gaseous, but sufficient together with shrinkage and tidal action (especially in the case of the earth, with its great satellite, the moon) to produce local areas of liquefaction which tend to fuse or "stope" their way to the surface, producing, in those instances in which they were able to reach the surface, volcanic eruptions and other phenomena of vulcanism. As these fused

FIG. 13. — "A brilliant spiral nebula in Canes Venatici, Messier 51."
From Chamberlin and Salisbury's Geology.

masses neared the surface, and the superincumbent pressure was lowered, they gave off their occluded gases and water vapor, which in the course of time formed the atmosphere and the ocean. This process is actually seen in volcanic eruptions to-day. From these, immense quantities of steam and water are emitted. Now this water would, of course, be saturated with the soluble constituents of the fused rock-mass from which it was emitted. Consequently, the planetesimal hypothesis furnishes the original mineral-saturated waters given off from fused rock-masses that is necessary in the magmatic water theory of ore deposits and, to that extent, is in harmony with that theory.

Lack of space forbids any fuller statement of this extremely

interesting hypothesis. It is developed in the work referred to in the light of the latest results of astronomy, physical chemistry, physics, and the ion theory of the constitution of matter, as well as of the latest deductions of the science of geology, and consequently is of the utmost value to any person having any interest whatever in any phase of geology. It should be consulted in the original work, which is more fully described in the bibliography.

NOTE. — During the passage of this book through the press, a very instructive article by Francis Church Lincoln, E. M., appeared in *Economic Geology*, Vol. ii., p. 258, on "Magmatic Emanations." This contains a review and summary of the articles that have appeared in scientific periodicals on this subject and a valuable tabulation of fifty analyses of volcanic emanations. Mr. Lincoln epitomizes the results of his study as follows:

"Magmatic emanations which are expelled as gases and vapors become at the ordinary temperatures of the earth's surface solids, liquids and gases. The principal gases are carbon dioxide, methane, hydrogen, hydrochloric acid, hydrogen sulphide, sulphur dioxide, nitrogen and oxygen, with less carbon monoxide and ethane and a very little hydrofluoric, hydriodic and hydrobromic acids. Water is the only important liquid, and it makes a large percentage of the total emanations. The solids are chiefly chlorides and sulphates of the alkalies and alkaline earths and of iron, together with a much smaller quantity of metals and mineralizers."

Another interesting recent article on ore deposits is "The Genesis of Ores," by Horace V. Winchell, Mining and Scientific Press, July 13, 1907, which was the Commencement address before the Montana School of Mines at Butte, 1907. The idea is presented that the condition of an ore deposit — whether unaltered refractory sulphides or oxidized and free-milling with secondary enrichment, etc., depends on the *ratio of oxidation to erosion*. These two processes are always operating and the predominance of one on the other determines the character of a given ore deposit.

His striking statement of the operation of water is well worth quoting:

"Their (ore deposits) mode of occurrence and relation to the enclosing rocks, makes it evident that they have been slowly deposited from solution. And the only solvent of general distribution is water, with its varying content of acids and alkalies under changing conditions as to temperature and pressure.

Water is the magic instrument by which all the copper in Butte's vast mines, all the gold and silver of the Comstock and of Goldfield were assembled. More potent than the philosopher's stone, more universal than the air we breathe, constantly at work, dissolving, transporting and re-depositing. With indefatigable zeal and never-flagging industry it searches through the innermost recesses and penetrates the most closely locked chambers of the rocks, removing treasures through their walls, and often repairing the breaches made in the attack so skilfully as to defy detection or make the masonry stronger than when first laid. . . . Geologists are not agreed as to the source of this water."

VI

Development of a "common law" of mining in California; historical sketch of the right to pursue the vein indefinitely on its dip; mining laws of England, Germany, Mexico, with reference to similar rights.

Development of a "Common Law" of Mining in California

GOLD was discovered in California in January, 1848, the province being then held by the United States by right of conquest, which was afterward ratified by the treaty of Guadalupe Hidalgo, proclaimed July 4, 1848. Then immediately began the historical rush of gold-hunters whose unparalleled success in finding the precious metal poured into the channels of commerce of the United States and of the world a flood of gold that has produced profound industrial and political effects.

But all the hunting and digging of this stupendous treasure was done without any direct sanction of law until 1866, before which year all of the richer placer deposits had been exhausted and much gold had been mined out of the mother lode. During all of this time prospectors and miners were technically trespassers upon the public land belonging to the United States, and there were absolutely no statutory or even common-law principles or rules to define and guide mining and mining rights. But this strenuous activity in seeking and mining gold could not be conducted without some kind of law other than the primitive rule of "might makes right." Very early the miners, realizing this, made laws for themselves in the shape of rules, regulations, and customs governing the digging of gold in the various districts. Though these rules and customs differed somewhat in the different districts as to details, there were general features common to all. Two of these are of special importance as they were substantially incorporated in the United States mining laws enacted later. They were: (1) discovery and working gave right to the mineral;

and (2) in the case of mineral found in veins, the discoverer had the right to pursue his vein to any depth although it conducted him under the surface of another claim.

The system which grew up regulating mining operations was a true example of the development of a "common law" from custom. No better way of enabling the reader to realize the spirit of those pioneer times and the motives of the creators of this system can be found than to give a portion of the speech of the Hon. William M. Stewart, senator from Nevada, in the United States Senate on June 18, 1866, the subject under consideration being the first mining law, usually known as the statute of 1866.[1] It is a vivid picture of the circumstances and activities of the Treasure Search such as would be impossible for any one to paint who had not himself seen and taken part in the events described. The senator said:

"Upon the discovery of gold in California in 1848, a large emigration of young men immediately rushed to that modern Ophir. These people, numbering in a few months hundreds of thousands, on arriving at their future home found no laws governing the possession and occupation of mines but the common law of right, which Americans alone are educated to administer. They were forced by the very necessity of the case to make laws for themselves. The reason and justice of the laws they formed challenge the admiration of all who investigate them. Each mining district, in an area extending over not less than fifty thousand square miles, formed its own rules and adopted its own customs. The similarity of these rules and customs throughout the entire mining region was so great as to attain all the beneficial results of well-digested, general laws. These regulations were thoroughly democratic in their character, guarding against every form of monopoly, and requiring continued work and occupation in good faith to constitute a valid possession. . . .

"The Legislature of California, at their following session, in 1851, had under consideration the subject of legislating for the mines; and after full and careful investigation wisely concluded to declare that the rules and regulations of the miners themselves might be offered in evidence in all controversies respecting mining claims, and, when not in conflict with the constitution of laws of the State or of the United States, should govern the decision of the action. A series of wise, judicial decisions molded these regulations and customs into a comprehensive system of common law, embracing not only mining law (properly speaking), but also regulating the use of water for mining purposes. The same system has spread over all the interior States and Territories where mines have been found as far east as the Missouri River. The miner's law is a part of the miner's nature. He made it. It is his own bantling, and he loves it, trusts it, and obeys it. He

[1] *Congressional Globe*, 1st session, 39th Congress, pp. 3225 *et seq.*

has given the honest toil of his life to discover wealth which, when found, is protected by no higher law than that enacted by himself under the implied sanction of a just and generous Government. Miners as a community devote three fourths of their aggregate labor to exploration, and consequently are, and ever will remain, poor, while individuals amass large fortunes, and the treasury of the world is augmented and replenished.

"Senators who have not given this subject special attention can hardly realize the wonderful results of this system of free mining. The incentive to the pioneer held out by the reward of a gold or silver mine, if he can find one, is magical upon the sanguine temperament of the prospector. For near a quarter of a century a race of men, constituting a majority by far of all the miners of the West, patient of toil, hopeful of success, deprived of the associations of home and family, have devoted themselves, with untiring energy, to sinking deep shafts, running tunnels thousands of feet in solid granite, traversing deserts, climbing mountains, and enduring every conceivable hardship and privation, exploring for mines, all predicated upon the idea that no change would be made in this system that would deprive them of their hard-earned treasure. Some of these have found valuable mines and a sure prospect of wealth and comfort when the appliances of capital and machinery shall be brought to their aid. Others have received no compensation but anticipation, no reward but hope.

"While these people have done little for themselves, they have done valuable service for this Government. They have enhanced the value of the property of the nation near 100 per cent., as I shall hereafter show, and they have converted that vast unknown region, extending from British Columbia on the north to Mexico on the south, and from the eastern slope of the Rocky Mountains to the western decline of the Sierra Nevada, into the great gold and silver fields of the United States, surpassing in richness and extent the mines of any other nation on the globe. I assert, and no one familiar with the subject will question the fact, that the sand plains, alkaline deserts, and dreary mountains of rock and sage brush of the great interior would have been as worthless to-day as when they were marked by geographers as the great American desert but for this system of free mining fostered by our neglect and matured and perfected by our generous inaction. No miner has ever doubted the continued good faith of the Government, but has put his trust in its justice and liberality, traversing mountain and desert, as incessantly and as hopefully as the farmer of the West has plowed his field. What he now occupies he has discovered and added to the wealth of the nation. . . .

"To extend the preëmption system, applicable to agricultural lands, to mines is absolutely absurd and impossible. Nature does not deposit the precious metals in rectangular forms descending between perpendicular lines into the earth, but in veins or lodes varying from one foot to three hundred feet in width, dipping from a perpendicular from one to eighty degrees and coursing through mountains and ravines at nearly every point of the compass. In exploring for vein mines, it is a vein or lode that is discovered, not a quarter section of land marked by surveyed boundaries. In working a vein more or less land is required, depending upon its size, course, dip,

and a great variety of other circumstances not possible to provide for in passing general laws. Sometimes these veins are found in groups, within a few feet of each other, and dipping into the earth at an angle of from thirty to fifty degrees, as at Freiburg, in Saxony, or Austin, in Nevada. In such case a person buying a single acre in a rectangular form would have several mines at the surface and none at five hundred or a thousand feet in depth. With such a division of a mine, one owning it at the surface, another at a greater depth, neither would be justified in expending money in costly machinery, deep shafts, and long tunnels for the working of the same. Nor would it do to sell the land in advance of discovery, for this would stop explorations and practically limit our mining wealth to the mines already found; for no one would prospect with much energy upon the land of another, and land speculators never find mines. The mineral lands must remain open and free to exploration and development; and while this policy is pursued our mineral resources are inexhaustible. There is room enough for every prospector who wishes to try his luck in hunting for new mines for a thousand years of exploration, and yet there will be plenty of mines undiscovered. It would be a national calamity to adopt any system that would close that region to the prospector.

"The question then presents itself, how shall the Government give title, so important for permanent prosperity, and avoid these intolerable evils? I answer, there is but one mode, and that is to assure the title to those who now or hereafter may occupy according to local rules suited to the character of the mines and the circumstances of each mining district. The importance of the legislation of this kind is daily increasing by the agitation of the subject, by the introduction of bills looking to what the miners regard as a general system of confiscation, destroying all confidence in mining titles, and by the absolute necessity of some system guaranteeing to capitalists security for their investment."

It was largely through the efforts of Senator Stewart that the Act of 1866 was passed, instead of a proposed measure, by which all mineral lands were to be sold for the purpose of raising money to pay the enormous national debt created by the Civil War then just ended.

In *Jennison* vs. *Kirk*, 98 U. S., 453, Justice Field says in regard to the circumstances attending the growth of this common law of miners:

"Into these mountains the emigrants in vast numbers penetrated, occupying the ravines, gulches, and cañons, and probing the earth in all directions for the precious metals. Wherever they went, they carried with them the love of order and system and of fair dealing which are prominent characteristics of our people. In every district which they occupied they framed certain rules for their government by which the extent of ground they could severally hold for mining was designated, their possessory right to such ground

secured and enforced, and contests between them either avoided or determined."

Right to Pursue the Vein Indefinitely on its Dip

A cardinal feature of nearly all of these miners' rules and regulations was the right they gave the miner to pursue his vein indefinitely into the earth, although in its downward course it passed beneath the surface of other claims. As an example, we give the quartz regulations of Tuolumne Co., Calif., adopted September 1, 1858.[2]

Article Second: "Provided that the right to 150 feet herein granted on each side of the vein shall not be deemed to conflict with or detract from the right of any subsequent locator who may discover a vein *outside* of said 150 feet to follow *his vein* through such ground."

In the Territory of Arizona this provision attained to the dignity of a statutory provision, it being enacted therein, January 1, 1865:

"Every mining claim or pertenencia is declared to consist of a superficial area of 200 yards square, to be measured so as to include the principal mineral vein or mineral deposit, always having reference to and following the dip of the vein so far as it can or may be worked with all the earth and minerals therein."

This principle of allowing a vein to be followed to any depth on its dip, even though it entered the ground of other proprietors, was afterward incorporated by Congress into the United States mining laws; and it has provoked so much discussion that it will be of interest to examine briefly the mining laws of other countries with reference to the existence of similar rights.

Mining Laws of other Countries on Similar Rights

The principle of the common law of England which gives the surface proprietor the exclusive use of all minerals beneath the surface, except the regalian rights to the precious metals, has been so firmly fixed in the jurisprudence of all English-speaking peoples that the devotees of this system have been filled with immeasurable astonishment for forty years that their sacred formula *Cujus est solum ejus est usque ad coelum*[3] should be in-

[2] Browne, "Mineral Resources," 1867, p. 237, (Ex. Docs. Nos. 25 to 49, 2nd Sess. 39th Cong.).

[3] To whomsoever the soil belongs, he owns also to the sky and to the depths.

fringed. The common law of England was formed for the exclusive benefit of agricultural interests by an agricultural people to whom the surface was the only thing of value, and all rights were subordinated to those of the surface proprietor. But, as we shall see, even in England there were certain districts where mining interests prevailed early in history. In these we find that coincident with the growth of the common law in general there was the growth of a common law of mining for such districts which recognize the fact that the vein, the deposit of ore, was the principal thing, and which gave the owner of the vein the right to follow his section of the same to whatever depth that he could do so under mining conditions, even though this carried him beneath the surfaces of adjacent proprietors.

The districts in question were in the county of Derby in England, where

"It is admitted that from the earliest historic times the miners residing in this county have continued in the uninterrupted exercise and enjoyment of various mining privileges, yet both ill-defined and repugnant to the common law. Attempts have been made at various times by the landowners to stop the trespasses of the miners upon their private lands, and so successful were the former in their resistance, that the miners, in the sixteenth year of the reign of Edward I (1287), petitioned that King to redress their grievances. He accordingly issued a warrant or commission directed to the sheriff of Derbyshire, signifying that the King has assigned Reginald of the Ley, and William of Meynall, to inquire, by the oaths of good and lawful men of the county, concerning the liberties that the miners claimed to have in those parts.

"This commission was solemnly executed at Essenburn, now Ashburn, by a jury, who by their inquisition returned that the miners claimed, by no charter, but by immemorial custom, and that their rights and titles to these mines should be preserved to them. On that return the King admitted their rights, and they have quietly enjoyed certain of their privileges ever since." [4]

By the reign of Victoria these customs had become indefinite and uncertain, so that they were reënacted in statutory form as 15 & 16 Vict., Chap. CLXIII, by which it was enacted:

"Sec. 1st. It is lawful for all subjects of this realm to search for, sink and dig mines, or veins of lead ore, upon, in or under all manner of lands, of whose inheritance they may be, churches, churchyards, places for public worship, burial grounds, dwelling houses, orchards, gardens, pleasure grounds

[4] Thomas Tapping, "The Derbyshire Mining Customs," London, 1854, p. 6

and highways excepted . . . Provided always that nothing herein contained shall prevent or hinder the miner from following and working his vein, and searching for and getting lead ore *under such excepted places as aforesaid*, at a lower depth than fifteen yards from the surface." [5]

In Germany a similar right of extralateral pursuit of a mineral vein existed. Here all valuable minerals belonged to the sovereign and leases must be obtained from him before mining could be carried on, even by owners of the surface. The provisions of these leases are stated by Dr. Raymond as follows: [6]

"Mining leases covered a certain area of the surface and a space below the surface, either bounded by vertical planes or by surfaces parallel with the dip of the vein. The first was called a square location (*Gevierdtfeld*), and the second an inclined location (*Gestrecktfeld*). The practice of following to any distance outside of the vein leased the 'dips, spurs, and angles,' was unknown; and I am unable to discover any traces of it in ancient or modern times except in the mining customs of this country. The possessor of an inclined location was generally allowed to work about 30 feet in the hanging wall, and the same distance below the foot wall (*Vierung viertehalb Lachter ins Hängende, und viertehalb Lachter ins Liegende*). Within these limits all the ore discovered might be extracted by the lessee. In case of veins crossing the elder location took precedence, but could only maintain the right to a zone of 30 feet on each side of its vein. In cases of doubtful controversy the matter was compromised by a union of the two mines. The simple square location was applied to beds, masses, and even to true veins, when they possessed a dip of not more than 15 degrees below the horizontal plane. The size of this kind of location varied with the locality and the circumstances, such as the number of associates or stockholders, etc. A frequent size seems to have been about 200 feet square with the discovery shaft in the center."

These provisions have been superseded in Germany by later laws under which mining rights are bounded in depth by vertical planes.

The same problem was solved in a different way by the Spanish laws regulating mining in Mexico. The claim was made wider according as the vein departed more from the perpendicular. The law states the reasons for the making of this provision and the details of the same so well that the sections directly concerned are worthy of reproduction.

[5] *Ibid.*, p. 8.

[6] "Mineral Resources," 1869, Washington, p. 195 (Ex. Docs. No. 50 to No. 82, 3rd Sess. 40th Cong.).

Mining Ordinances of Mexico Enacted by Order of His Majesty, the King of Spain, at Madrid, 1783

CHAPTER VIII. PROPERTIES, INTERMEDIATE SPACES, AND MEASURES

Section 1. Experience having shown that the equality of the mine measures established on the surface cannot be maintained under ground, where in fact the mines are chiefly valuable, it being certain that the greater or less inclination of the vein upon the plane of the horizon must render the respective properties in the mines greater or smaller, so that a true and effective impartiality which it has been desired to show toward all subjects, of equal merit, has not been preserved; but, on the contrary, it has often happened that when a miner, after much expense and labor, begins at last to reach an abundant and rich ore, he is obliged to turn back, as having entered on the property of another, which later may have denounced the neighboring mine, and thus stationed himself with more art than industry. This being one of the greatest and most frequent causes of litigation and dissension among miners, and considering that the limits established in the mines of these kingdoms, and by which those of New Spain have been hitherto regulated, are very confined in proportion to the abundance, multitude, and richness of the metallic veins which it has pleased the Creator of His great bounty to bestow on those regions, I order and command that in the mines where new veins, or veins unconnected with each other, shall be discovered, the following measures shall in the future be observed.

Sec. 2. On the course and direction of the vein, whether of gold, silver, or other metal, I grant to every miner, without any distinction in favor of the discoverer, whose reward has been specified, 200 yards, called measuring yards, taken on a level, as hitherto understood.

Sec. 3. To make what they call a square, that is, making a right angle with the preceding measure, supposing the descent or inclination of the vein to be sufficiently shown by the opening or shaft of ten yards, the portion shall be measured by the following rule.

Sec. 4. Where the vein is perpendicular to the horizon (a case which seldom occurs, a hundred level yards shall be measured on either side of the vein, or divided on both sides, as the miner may prefer.

Sec. 5. But where the vein is in an inclined direction, which is the most usual case, its greater or less degree of inclination shall be attended to in the following manner.

Sec. 6. If to one yard perpendicular the inclination be from three fingers to two palms (85° 25′ to 63° 20′ from the horizontal), the same hundred yards shall be allowed for the square (as in the case of the vein being perpendicular.)

Sec. 7. If to the said perpendicular yard there is an inclination of

2 palms and 3 fingers, the square shall be of 112½ yards (= Dip 60° 39′)
2 palms and 6 fingers, the square shall be of 125 yards (= Dip 58°)
2 palms and 9 fingers, the square shall be of 137½ yards (= Dip 55° 30′)
3 palms and 0 fingers, the square shall be of 150 yards (= Dip 53° 08′)
3 palms and 3 fingers, the square shall be of 162½ yards (= Dip 50° 55′)

3 palms and 6 fingers, the square shall be of 175 yards (= Dip 48° 50′)
3 palms and 9 fingers, the square shall be of 187½ yards (= Dip 46° 50′)
4 palms and 0 fingers, the square shall be of 200 yards (= Dip 45°)

so that if to one perpendicular yard there correspond an inclination of four palms, which are equal to a yard, the miner shall be allowed two hundred yards on the square on the declivity of the vein, and so on with the rest.

SEC. 8. And supposing that in the prescribed manner any miner should reach the perpendicular depth of two hundred yards, without exceeding the limits of his portion, by which he may commonly have much exhausted the vein, and that those veins which have greater inclination than yard for yard, that is to say, of forty-five degrees, are either barren or of little extent, it is my sovereign will that although the declivity may be greater than the above-mentioned measures, none shall exceed the square of two hundred level yards; so that the same shall be always the hundreds as declared above.

SEC. 9. However, if any mine owner, suspecting a vein to run in a contrary direction to his own (which rarely happens), should choose to have some part of his square in a direction opposite to that of his principal vein, it may be granted to him, provided there shall be no injury or prejudice to a third person thereby.[7]

There has been considerable dispute as to whether or not these laws or customs of other countries that have just been mentioned directly suggested to the California miners their rules giving the right to follow the vein extralaterally. It is, of course, possible that miners who were familiar with these customs or laws in England, Germany, or the Spanish possessions might have come to California and secured their recognition there. But it is more probable that the similarity only arose from similar industrial conditions producing similar effects in human customs and laws in distant countries; for there is an inherent injustice in the idea that the miner who has had the courage to spend his time and money and develop a valuable mine by following a vein, it may be, hundreds or thousands of feet before he finds enough mineral to return his expenditure should lose the benefit of his endeavors by the vein going on the incline outside the boundaries of his claim into the territory of a person who has located the adjoining ground and then simply stood aside and waited for the other to determine whether or not mineral existed in the vein in paying quantities. It is true that this rule has

[7] Congdon, "Mining Laws and Forms," 3d ed., San Francisco, 1864, p. 110; "Mineral Resources," 1867, p. 260.

been much criticized in late years; but I will defer a discussion of its advantages or disadvantages until later.

But there is no question whatever that the rules and customs of the early California camps were the origin of the apex and many other features of Federal legislation, when the latter was tardily enacted.

VII

Recognition by Congress of the precious metal mining industry on the public domain; land on which mining rights may be acquired; no mineral rights in land included in grants; Indian, military, and forest reservations; school and university lands; railroad grants; agricultural entries; timber and stone land, town sites; Mexican grants; aliens, minors, and married women.

Recognition by Congress of the Precious Metal Mining Industry

THE first recognition by Congress of the great industry of mining for precious metals on the public domain was the Act of February 27, 1865.[1] By this time mining had been carried on for fifteen years with a yield of $818,000,000 gold and $26,750,000 silver. During this period of non-action by Congress, mining litigation had been frequent in California and some of the other mining States, and the courts, in order to protect the miners in their rights, had formulated a presumption, arising out of this inaction of Congress, of a permission or license by the Government to the miner to occupy and work the mineral land belonging to the Nation.[2]

The next recognition by Congress of the rights of miners was the Act of July 4, 1866, which provided: "In all cases lands valuable for minerals shall be reserved from sale except as otherwise expressly directed by law." [3]

These acts only recognized the possessory rights of the miner and withdrew mineral lands from sale; but no method was provided by which the miner could obtain absolute title to his

[1] See Appendix.

[2] *Gold Hill, etc., Co.* vs. *Ish*, 5 Ore., 104; *Irwin* vs. *Phillips*, 5 Calif., 140; *Hoffman* vs. *Stone* 7 Calif., 46; *Tartar* vs. *Spring Creek, etc., Co.*, 5 Calif., 396; *Sparrow* vs. *Strong*, 3 Wallace, 97; *Merced, etc., Co.*, vs. *Freemont*, 7 Calif., 317; *Conger* vs. *Weaver*, 6 Calif., 548; *Hill*, vs. *King*, 8 Calif., 337; *McKeon* vs. *Bisbee*, 9 Calif., 137; *Partridge* vs. *McKinney*, 10 Calif., 181; *State* vs. *Moore*, 12 Calif., 56; *Curtis* vs. *Sutter*, 15 Calif., 263; *Hughes* vs. *Devlin*, 23 Calif., 502.

[3] R. S., sec. 2318.

property such as the owner has in farm land. This was furnished by the Act of July 26, 1866, which gave a method of obtaining a patent to a claim containing "a vein or lode of quartz or other rock in place bearing gold, silver, cinnabar, or copper." This statute contained a specific grant of the right of exploration and occupancy of the mineral land of the public domain that previously had been only a "presumption" of the courts for the purpose of enabling the miner to assert his rights in a court of law whenever they were invaded. This law did not cover placers, which remained as before and were held only by possessory rights until the Act of July 9, 1870, which provided a method of securing title to such claims. All of these mining laws were revised and consolidated in the Act of May 10, 1872. This act is substantially preserved in the Revised Statutes and is given, together with all subsequent amendments, in the Appendix to the present work.

The purpose of the United States statutes in relation to mining has been to provide a method by which mining rights in the public domain might be acquired, maintained, or forfeited, and by which also absolute title might be gained. The following is perhaps as good a classification of the various subjects of the body of law that has been created by these statutes and the decisions of the courts thereon, as can be made:

1. Upon what land mining rights may be acquired; qualifications of a locator; procedure to acquire such rights.
2. The nature and incidents of the rights acquired, their continuance or maintenance, their forfeiture and loss.
3. The process of obtaining absolute title.
4. Peculiar rights given by statute—extralateral provision, etc.

Land on Which Mining Rights may be Acquired

The fundamental requisite for the acquirements of rights in land under the United States statutes is that it must be mineral land on the public domain of the United States in one of the following States: Arkansas, California, Oregon, Washington, Idaho, Montana, North Dakota, South Dakota, Colorado, Wyoming, Utah, Nevada, Florida, Mississippi, Louisiana, the Territories of Arizona and New Mexico, the District of Alaska, and the Philippine Islands. It must be noted, however, that the provisions of the law of 1872 and its amendments do not apply to the Philippines, which are governed by the Acts of 1902 and

1905, applying only to these insular possessions of the United States. As we have already noticed, the remaining States and Territories which contain public domain have been removed from the operation of the mining statutes by special laws enacted at various times.

Exceptions — Reservations, Grants, etc.

In the States and Territories to which the mining statutes apply, not all the public land is locatable under the statutes. If the land has been reserved from sale, or previously granted by some valid and subsisting grant, it is not open to location.[4]

Indian, Military, and Forest Reservations. — No valid locations can be made within an Indian reservation.[5] Nor can a valid location be made upon a military reservation unless the latter has been abandoned and restored to the public domain. The same is true of tracts of land reserved for public parks such as the Yellowstone National Park.[6]

After the passage of the Act of March 3, 1891, authorizing the withdrawal of parts of the public domain from sale, entry, etc., for the creation of forest preserves, it was held that mining claims could not be located thereon.[7] But in 1898 Congress enacted that all mineral lands which may have been or may be shown to be such in forest reservations shall continue to be subject to location and entry as mining claims, notwithstanding the existence of such forest reservations.[8]

The subject of the effects of the various "grants" made by Congress on the locating of the land for mining purposes may be considered under the following heads, which include the most important.

[4] *Davis* vs. *Weibbold*, 139 U. S., 507; *Faxon* vs. *Barnard*, 2 McCrary, 44; *Belk* vs. *Meagher*, 104 U. S., 279; *Deffeback* vs. *Hawke*, 115 U. S., 392, *U. S.* vs. *Iron Silver, etc., Co.*, 128 U. S., 673; *Carey* vs. *N. P. Ry. Co.*, 15 L. D., 439; *Mt. Diablo, etc., Co.*, vs. *Callison*, 5 Sawyer, 439; *Chapman* vs. *Toy Long*, 4 Sawyer, 28; *Steel* vs. *St. Louis, etc., Co.*, 106 U. S., 447; *Omar* vs. *Soper*, 11 Colo., 380; *Armstrong* vs. *Lower*, 6 Colo., 393; *Duprat* vs. *James*, 65 Calif., 555; *Morenhaut* vs. *Wilson*, 52 Calif., 263; *Taylor* vs. *Middleton*, 67 Calif., 656; *Hall* vs. *Arnott*, 80 Calif., 348; *Watervale, etc., Co.*, vs. *Leach*, 33 Pacif., 418; *Iron Silver, etc., Co.*, vs. *Mike, Co.*, 143 U. S., 304; *Wheeler* vs. *Smith*, 5 Wash., 704; *Eilers* vs. *Boatman*, 3 Utah, 159; *Merrill* vs. *Dixon*, 15 Nevada, 401; *Golden Fleece, etc., Co.*, vs. *Cable, etc., Co.*, 12 Nevada, 312; *King* vs. *Edwards*, 1 Mont., 235; *Golden Terra, etc., Co.* vs. *Mahler*, 4 Morr. M. Rep, 390.

[5] *Kendall* vs. *San Juan, etc., Co.*, 144 U. S., 658.

[6] L. D., 552; 20 L. D., 32; 28 L. D., 172; *U. S.* vs. *Gear*, 3 How, 120; *Cotton* vs. *U. S.*, 11 How, 229; *Dugan* vs. *U. S.*, 3 Wheat, 181; *Wilcox* vs. *Jackson*, 13 Pet., 498.

[7] *U. S.* vs. *T. Y. G. H., etc. Co.*, 76 Fed., 693.

[8] 30 Statutes at Large, 34, 35, 36.

School Lands. — It has been the policy of Congress to reserve certain sections in each township from disposal and sale, and upon the organization of the States to grant such reserved land to the same for the maintenance of public schools. Since the organization of the Territory of Oregon the custom has been to reserve sections 16 and 36. Congress has also made other grants of land to certain States to be selected from the public domain for educational purposes, such as for the support of a university. In recent grants of this kind mineral lands are expressly reserved. The United States Supreme Court has laid down the doctrine that mineral lands, known to be such when the grants took effect, did not pass to the States.[9]

As soon as the survey is completed and approved the grant attaches to sections 16 and 36, if they are not mineral in character or otherwise appropriated at the time. This is the time when the character of the lands must be determined: if they are then proved to be mineral in character they do not pass by the grant. If they are not known to be mineral a subsequent discovery of mineral does not defeat the title given by the grant.[10]

In order to come within the designation "known mineral land," the land must be known to contain enough mineral to justify the spending money for the purpose of extraction or mining of the same at that time.[11]

When the land is all surveyed at the time the State is admitted, the grant and the inquiry as to whether mineral or not takes place at that time.

RAILROAD GRANTS

No mining location can be made on railroad grants or reservations.[12] As related to mineral land these grants may be separated into three classes: (1) grants of right-of-way; (2) grants of alternate sections within certain limits; and (3) grants of "indemnity" land within certain limits to replace alternate sections to which prior rights had attached depriving the railroad of the same.

Right-of-way. — The grant of a right-of-way was unconditional; and when the line of road was located, and map filed

[9] *Ivanhoe M. Co.* vs. *Keystone M. Co.*, 102 U. S., 167.
[10] *Ivanhoe M. Co.* vs. *Keystone M. Co.*, 102 U. S., 167.
[11] *Davis* vs. *Weibbold, etc.*, 139 U. S., 507.
[12] *Borden* vs. *N. P. R. Y. Co.*, 154 U. S., 188.

and approved, the title related back to the date of the grant and all mineral therein passed to the railroad company.[13]

Alternate Sections. — In these the mineral land was reserved by Act of Congress. After some litigation and conflicting decisions by the lower courts it was finally settled by the decision in the case of *Barden* vs. *Union Pacific R. R. Co.*, 154 U. S., 288, that the mineral character of the land might be ascertained and established at any time before patent was actually issued to the Railway Company, and that if its mineral character was so established the land became subject to location as mining claims. Of course if mineral is discovered after the issuance of patent to the Railway Company, this does not disturb the company's title to such land in the absence of fraud.[14]

Indemnity Land. — When a deficiency of land in the lands granted within the limits of the original grant has been ascertained, then other land within certain limits can be selected in lieu; but mineral land cannot be so selected.[15]

The grant does not attach until the selection is made, approved, and certified; and until this is done the Land Department retains jurisdiction to determine the character of the land, so that mining locations may be made thereon and patents issued therefor at any time prior to such final approval and certification.[16] The greater number of grants to railroads contain provisions that the exception of mineral shall not include coal and iron land, so these, therefore, passed to the Railway Company.

Entries for Agricultural and Other Purposes as Affecting Mining Locations

Agricultural Entries. — During the period the mining statutes have been in operation agricultural entries have been made in one or more of the following ways: homesteads, preëmptions, desert lands, timber culture claims, and by "scrip" issued by authority of various Acts of Congress. The preëmption and timber claim methods were repealed March 3, 1891.

Homesteads. — The applicant files his application in the local land office describing the land that he desires to enter. If the land is unappropriated and returned as non-mineral by the

[13] *St. Joseph R. R. Co.* vs. *Baldwin*, 103 U S., 426.
[14] *Traphagen* vs. *Kirk*, 77 P., 58; *Barden* vs. *N. P. Ry. Co.*, 154 U. S., 288.
[15] *U. S.* vs. *Mullan*, 10 Fed., 785; 119 U. S., 271.
[16] *Barney* vs. *R. R. Co.*, 117 U. S., 228; *U. S.* vs. *M. K. & T. R. R. Co.*, 141 U. S., 358

surveyor-general, the entry is received and recorded and reported to the General Land Office. But if the land has been returned as mineral the homestead entry will be suspended until after a hearing, which is in the nature of a contest and which is decided upon the examination of witnesses and other proof. The effect of a homestead entry is to withdraw the land from location during the time allowed by law for its completion. When a homestead entry has been made the land is *prima facie* agricultural in character, and is in the possession of the claimant. No right can be initiated through the commission of a trespass on such land; but if a prospector can make a peaceable and valid location on such homestead land he will be able to defeat the homestead rights and obtain a patent.

If he could not make a peaceable entry he still might have the character of the land determined by the Land Office, and if found to be mineral the homestead entry would be canceled and the ground opened to location. Such proceedings may be begun at any time before the issuance of a final certificate to the homestead claimant.[17] The mineral claimant must show that the land contains minerals in such quantities as to warrant a prudent man in the expenditure of his time and money in the development and extraction thereof.[18]

Timber and Stone Land. — The land for which application has been made for entry under these provisions of the statute are not withdrawn from the public domain and are open to location and purchase under the vein or placer provisions until the issuance of a final certificate to the timber or stone locator.[19]

Land purchased by "scrip" is withdrawn from the public domain immediately upon completion of the purchase.[20]

Desert Land Entries. — These are made on land *prima facie* non-mineral, and contests are decided on the same principle as homestead entries.

Town-site Entries. — Provision is made by the United States statutes for the entry of town sites upon mineral land; and a great deal of litigation has arisen out of these provisions. It would be beyond the scope of this treatise to discuss in detail the effect of the somewhat conflicting decisions on this subject,

[17] *Shiver* vs. *U. S.*, 150 U. S., 491.
[18] *U. S.* vs. *Copper Queen & Co.*, 60 Pac., 855; *Cleary* vs. *Skiffich*, 65 Pac., 59.
[19] *Halley* vs. *Diller*, 178 U. S., 476.
[20] *James* vs. *Germania Iron Co.*, 107 Fed., 596.

but the final results may be stated to be approximately as follows:

1. Where no application has been made for a town site the land of the public domain is open for exploration and location even though actually occupied as a town site.

2. If a patent for a town site has been issued, or final entry made, only such lands therein are excluded from its operation as were known to contain minerals of sufficient value at that time to justify working, and were in addition located or possessed as mineral land at that time.[21]

Known mining claims are excepted from town-site patents, and if the Land Department includes such in a patent, the patent is void to that extent.[22]

Mexican Grants

In the territory acquired from Mexico, comprising California, Arizona, New Mexico, Colorado, Wyoming, Utah, Nevada, etc., there were numerous areas of land claimed to have been granted to individuals by authority of the Government of Mexico, previous to the cession to the United States. Many of these were fraudulent. The rights of claimants to such alleged grants were passed upon and rejected or confirmed by (1) judicial tribunals under the "California Act"; (2) by direct action of Congress; and (3) by a special court created by Act of March 3, 1891, for the adjustment of land claims in Colorado, Wyoming, Utah, Nevada, New Mexico, and Arizona. An additional class is (4) undetermined claims, or those *sub judice*.

As concerns mineral rights in land claimed under Mexican grants the following may be stated as the rules of law in relation thereto:

1. Lands within the boundaries of a claimed grant are restored to the public domain and the operation of the mining laws (*a*) when the grant is finally rejected, or (*b*) when the claimant fails to present his claim to the proper tribunal within the time fixed by law.

2. In the case of "floating" grants the surplus after the boundaries of the grant had been fixed by the proper tribunal became public domain.

[21] *Steel* vs. *St. Louis M. Co.*, 106 U. S., 447; *Sparks* vs. *Pierce*, 115 U. S., 408; *Deffeback* vs. *Hawke*, 115 U. S., 392; *Davis* vs. *Weibbold*, 139 U. S., 507; *Dower* vs. *Richard*, 151 U. S., 658.

[22] *Silver Bow & Co.* vs. *Clark*, 5 Mont., 378; *Talbot* vs. *King*, 6 Mont., 76.

3. Final confirmation of a grant and issue of a patent thereto convey to the grantee all minerals, with the possible exception of grants falling under the jurisdiction of the Court of Private Land Claims of the Act of March 3, 1891, as to which the status of the minerals therein is uncertain.

4. So long as a grant is undetermined or *sub judice* no rights can be acquired under the mining laws except as to lands coming under the jurisdiction of the Act of March 3, 1891, since which date locations may be made on such land; and if the claim for a grant is rejected as to the land covered by the location such location will be good. But if such tribunal confirms the grant as to the ground covered by the mining location, such location will be void.[23]

Qualifications of a Locator

The provision of the statute is that mineral lands of the public domain "are open to occupation and purchase by citizens of the United States and those who have declared their intention to become such."[24] There is no distinction between a citizen and a person who has declared his intention to become such. Of course a location can be made by any person qualified to "occupy and purchase."

On the question as to whether an alien can make a valid location, there has been some conflict among the cases. The law, however, is now well settled that an alien by making a location obtains rights in which he will be protected by the courts against all the world except the Government, which, as the owner of the land, has the sole right to dispute his possession; this, if ever done, is by a proceeding called "office found." But this is true only so long as the alien allows his rights to rest in location; for he cannot obtain a patent because his citizenship, or declaration of intention to become such, must affirmatively appear before patent will be granted. If an alien become a citizen or declares his intention to become such even pending proceedings, his disabilities are removed, his rights relate back to the date of location, and he may obtain his patent.[25]

[23] This subject is fully discussed in Lindley on Mines, 2d ed., secs. 113–128, to which reference should be made for details.

[24] R. S., sec. 2319.

[25] *Manuel* vs. *Wulff*, 152 U S., 505; *Shea* vs. *Nilima*, 133 Fed., 209; *Stewart* vs. *Gold, etc., Co.*, 82 Pac., 475 (Utah).

Some of the mining States have statutory provisions that the location certificate that is recorded must contain a sworn statement that the locator is a citizen or has declared his intention to become such. The statutes of the particular State must be examined when this question arises.

If an alien sells or transfers his rights in a location to a citizen before the Government takes any action against him, the citizen acquires as full rights as if he himself had made the location. An alien may purchase as well as locate and hold a mining claim the same as a citizen, until proceeded against directly by the Government.[26]

A corporation, all of whose members are citizens, may locate a mining claim.[27]

A location may be made by a minor or by a married woman; also by an agent. This latter is true even though such action is without the consent or knowledge of the principal, provided it is afterward ratified by him. Officers of the United States Land Department cannot locate claims. In the case of *Lavagnino* vs. *Uhlig*, 198 U. S., 443 the question as to whether U. S. mineral surveyors could locate mineral claims was involved, but the case was decided on other grounds and this question not passed upon. The Utah Supreme Court has held that mineral surveyors cannot locate mining claims.[28] Consequently, the law in this regard is somewhat uncertain, but it seems probable that the rule of the Utah court will be ultimately adopted generally.

[26] *Stewart* vs. *Gold, etc., Co.*, 82 Pac., 475 (Utah).
[27] *Thomas* vs *Chisholm*, 21 Pac., 1019; *McKinley* vs. *Wheeler*, 130 U. S., 630.
[28] *Savage M. Co.* vs. *Uhlig*, 71 Pac., 1046.

VIII

How mining rights may be acquired; discovery; vein or mineral must be found before claim is staked out; amount of mineral necessary to validate claim.

Procedure to Acquire Mining Rights

Discovery.—Having considered what lands may be located as mining claims and the persons who may make the locations, the next subject for consideration is, what steps are necessary to acquire mining rights. The first step is the discovery of a vein or lode. Only *mineral* land of the public domain is open to location; so that before rights can attach it is necessary that the ground sought to be located be ascertained to be mineral land within the meaning of the law. Section 2320, Revised Statutes, concerning lode claims, states that these may be located "upon veins or lodes of quartz or other rock in place bearing gold, silver, cinnabar, lead, tin, copper or other valuable deposit." Consequently, if it is a vein or lode location, the discovery must be a vein or lode according to the legal definition of these terms. If a placer location, some kind of mineral of the kind for which the location is made, such as gold-bearing gravel, stream tin, oil, coal, or building stone, must be found in it. As to the amount of mineral that must be discovered in order to make a location valid, there is no fixed rule; but the courts are inclined to be liberal if the location is made in good faith. The discovery of pay ore is not required, but the mineral must be "in place."

But no *proof* is required of such discovery of mineral within either kind of claim, prior to the act of locating, recording, and marking the same, on the surface. Before a patent will be issued the deputy United States surveyor must certify that a mineral vein or lode is found in a lode claim; but, until the claim is surveyed for a patent, no proof of any kind is necessary. This omission to require proof, however, does not render a location without a mineral discovery therein valid; and a subsequent

valid location covering the whole or a part of a claim will hold the ground if made before any mineral is discovered in such senior claim by the original locator thereof.

One of the important statutory requisites of a vein or lode is that the material of which it consists shall be "in place." *In place* means solid fixed rock as distinguished from surface "wash," "slide," débris, or alluvium; but it does not mean that the material of the vein must be free from breaks, seams, cracks, fissures, gashes, or general brecciation. It is the equivalent of the geological term *in situ*. In an early case the court said:

"It is in place if it is inclosed and embraced within the general mass of the mountain, and fixed and immovable in that position." [1]

In another case the court defines *in place* as follows:

"After a careful consideration we reach the opinion that a vein or lode cannot be in place, within the meaning of the act, unless it should be within the general mass of this mountain. It must be inclosed by, or held within, the general mass of fixed and immovable rock. It is not enough to find a vein or lode lying on the top of fixed or immovable rock, for that which is on top is not within, and that which is without the rock in place cannot be said to be within it. . . . If the rock above the lode is in its original position, although somewhat broken and shattered by the movement of the country, or other causes, it is in place." [2]

The United States Supreme Court says:

"Excluding the wash, slide, or débris on the surface of the mountain, all things in the mass of the mountain are in place." [3]

Valuable mineral found loose as "float" or in débris or "wash" on the hillside will not be sufficient to validate a mining claim. In a case in a Federal court the court says: "Unless a vein has been discovered, the finding of $600 worth of ore in an open cut is not sufficient." [4]

Considering affirmative definitions the Supreme Court says: "With well-defined boundaries very slight evidence of the existence of ore within such boundaries will prove the existence of a lode." In *Burke* vs. *McDonald*, 29 Pac., 98, an instruction was sustained stating the law as follows:

[1] *Stevens* vs. *Williams*, 23 Fed. Cas., 40.

[2] *Leadville, etc., Co.* vs. *Fitzgerald*, 15 Fed. Cas., 98, 1 McCrary, 480.

Iron Silver, etc., Co. vs. *Cheesman*, 116 U. S., 529. See also *Jones* vs. *Prospect Mt. Tunnel Co.*, 21 Nev., 339. See pp. 175, 176, 177 for other definitions by the court of "in place."

Waterloo M. Co. vs. *Doe*, 56 Fed., 685.

"A valid location of a mining claim may be made whenever the prospector has discovered any indication of mineral so that he is willing to spend his time and money following it with the expectation of finding ore."

The common practice in mining regions of staking out the surface without any discovery therein of a mineralized vein or lode sufficient to bring it within the statute has come before the courts, and they condemn it in no uncertain terms. The Supreme Court says:

"A mere posting of a notice on a ridge of rocks cropping out of the earth or on other ground, that the poster has located thereon a mining claim, without any discovery or knowledge on his part of the existence of metal there, or in its immediate vicinity, would be justly treated as a mere speculative proceeding, and would not of itself initiate any right. There must be something beyond a mere guess on the part of the miner to authorize him to make a location which will exclude others from the ground, such as the discovery of the presence of the precious minerals in it, or in such proximity to it as to justify a reasonable belief in their existence." [5]

In *Burke* vs. *McDonald*, 2 Idaho, 679 (682), the court also refers to the practice of posting notice before discovery of mineral as follows:

"The difficulty is not so much ignorance of the law's demand, or of what constitutes a vein under it, as its wilful violation. The practice of posting notices upon any ground within which the existence of a ledge may be imagined has become so common that the emphatic requirement of the law, that a ledge discovery must initiate the location of a claim, is nearly forgotten. The courts will insist upon and enforce this most important provision of the law wherever opportunity offers. It must be remembered that every seam or crevice in the rock, even though filled with clay, earth, or rock, does not constitute a vein, nor every ridge of stained rocks its cropping. Nor, on the contrary, is it required that well-defined walls shall be developed, or paying ore found within them. But something must be found in place, as rock, clay or earth, so colored, stained, and decomposed by the mineral elements as to mark and distinguish it from the inclosing country. While the contents of ore-bearing veins widely differ, there is that indescribable peculiarity in the 'ledge matter,' the matrix of all ledges, by which the experienced miner easily recognizes his ledge when discovered."

On the question of the amount of mineral necessary a District (U. S.) court says [6]:

"a lode cannot exist without valuable ore. But, if there is value the

[5] *Erhardt* vs. *Boaro*, 113 U. S., 527 (536).
[6] *Stevens* vs. *Gill*, Fed. Cas. No. 13,398.

form in which it appears is of no importance, whether it be iron or manganese, carbonate of lead, or something else yielding silver, the result is the same. The law will not distinguish between different kinds and classes of ore if they have appreciable value in the metal for which the location was made. Nor is it necessary that the ore shall be of economical value for treatment. It is enough if it is something ascertainable, something beyond a mere trace, which can be positively and certainly verified; . . . in the case of silver ore the value must be reckoned by ounces, one or more in the ton of ore, and if it comes to that it is enough, other conditions being satisfied, to establish the existence of a lode."

In still another case [7] the court says:

"When the locator finds rock in place, containing mineral, he has made a discovery within the meaning of the statute, whether the earth or rock is rich or poor, whether it assays high or low."

The same subject has also been passed upon a number of times by State courts. The court says in *Muldrick* vs. *Brown*, 61 Pac., 428 (Oregon):

"the finding of ore or metalliferous rock in place in a defined vein is sufficient to satisfy the statute, although it does not contain ore in paying quantities. If the rock in place is sufficiently encouraging to warrant an ordinarily prudent man in spending his time or money upon it, it is sufficient, as against a subsequent locator for mining purposes." [8]

Although apparently not passed upon by the courts, doubtless the discovery of a vein or other ore deposit by drilling would be a discovery within the meaning of the statute; but the drill-hole would not be taken as equivalent to the discovery shaft.[9] Although there must be a discovery of mineral to make a valid location, still a location otherwise good made without such a discovery will be validated by a subsequent discovery therein, provided such discovery was made before adverse rights intervened.[10] As between the Government and the locator, it is not

[7] *Book* vs. *Mining Co*, 58 Fed., 106.

[8] *McShane* vs. *Kenkle*, 44 Pac., 979 Mont.; *Michael* vs. *Mills*, 45 Pac., 429; *Hyman* vs. *Wheeler*, 29 Fed., 347; *Conway* vs. *Hart*, 62 Pac., 44, 129 Colo., 480; *Iron Silver Co.* vs. *Mike & Starr Co.*, 143 U. S., 394; *Fitzgerald* vs. *Clark*, 42 Pac., 273; *Butte, etc., Co.* vs. *Société, etc.*, 23 Mont., 177; 58 Pac., 111; *Iron, etc., Co.* vs. *Elgin, etc., Co.*, 118 U. S., 196; *Iron, etc., Co.* vs. *Murphy*, 3 Fed., 368; *Bluebird, etc., Co.* vs. *Murray*, 9 Mont., 468, 23 Pac., 1022; *Cheesman* vs. *Shreeve*, 40 Fed., 787; *Stevens* vs. *Williams*, Fed. Cas., 13,413; *Jones* vs. *Prospect, etc., Co.*, 21 Nev., 339, 31 Pac., 642; *Leadville, etc., Co.* vs. *Fitzgerald*, 1 McCrary, 480, 15 Fed. Cas., 98.

[9] Morrison's "Mining Rights," 12th ed., p. 31.

[10] *Jupiter M. Co.* vs. *Bodie Cons. Co.*, 11 Fed., 666; *Patchen* vs. *Keeley*, 14 Pac., 347; 19 Nev., 404; *Erwin* vs. *Perigo*, 93 Fed., 608; *Nev., etc., Co.* vs. *Home Co.*, 98 Fed., 673; *Sharkey* vs. *Candiani*, 85 Pac., 219 (Ore.); *Healy* vs. *Rupp*, 86 Pac., 1015 (Colo.).

a vital fact that a discovery of mineral had been made before the commencement of any of the steps required to perfect a location; and if at entry (application for patent) a discovery and a perfect location have been made, the Government would not be justified in rejecting the application for a patent because these steps had not been taken in the usual order.[11]

A location based upon a discovery on the dip or downward course of a vein or lode whose top or apex lies inside the vertical lines of a prior subsisting location is wholly illegal and void.[12]

The locator need not be the first discoverer of the vein, but may appropriate abandoned discoveries.[13] But if by local statute a certain amount of work, as a 10-ft. shaft, is required he must sink the old shaft that much deeper or a new shaft 10 ft. deep. Only one location can be made on one discovery. A discovery cannot be divided and two locations made on the vein in opposite directions.[14]

If the locator, through any cause, loses the discovery he loses all right to the claim. A discovery shaft on the boundary, however, partly on one claim and partly on another previously located, will validate the last location.[15]

In most of the mining States statutes have been enacted requiring additional work, usually a shaft 10 ft. deep, within a certain time, usually 60 to 90 days, to render a location valid. These statutes are given in the Appendix.

An important question arises as to the rights of a prospector who is in possession and sinking a shaft or doing other work with intent to make a discovery, but has not yet found a mineral vein or lode within the meaning of the law. Strictly speaking, he cannot make a valid location until he has discovered mineral. However, he has the rights given him by possession; and, while there is some conflict in the decisions on this point, the rule seems to be that so long as the prospector is working and in actual possession, called in law *pedis possessio*, the law will protect

[11] *Creede, etc., M. Co.* vs. *Uintah, etc., M. Co.*, 196 U. S., 337, *Healey* vs. *Ropp*, 86 Pac., 1015.

[12] 33 L. D., 142; *Eilers* vs. *Boatman*, 2 Pac., 66 (71); *Flagstaff M. Co.* vs. *Tarbet*, 98 U. S., 463; *Iron Silver M. Co.* vs. *Cheesman*, 116 U. S., 529 (533); *Larkin* vs. *Upton*, 144 U. S., 19.

[13] *Hayes* vs. *Lavagnino*, 17 Utah, 185; *Nevada, etc., Co.* vs. *Home Co.*, 98 Fed., 673.

[14] *Gemmell* vs. *Swain*, 72 Pac., 662; *McPherson* vs. *Julius*, 95 N. W, 428; *Reynolds* vs. *Paskoe*, 66 Pac., 1064; *McKinstry* vs. *Clark*, 4 Mont., 370: but see *Smith* vs. *Newell*, 86 Fed., 56; *Upton* vs. *Larkin*, 144 U. S., 19.

[15] *Upton* vs. *Larkin*, 144 U. S, 19; *Smith* vs. *Newell*, 86 Fed., 56; *Craig* vs. *Thompson*, 10 Colo., 517, 16 Pac., 24.

him, and upon discovery he can make a location which will relate back to the time of beginning work and which can be extended to the amount of a full claim over any ground to which adverse rights had not attached at the time of beginning the work which resulted in such discovery.[16] In some States there are local statutes governing the matter.

After making the discovery, local statutes in some States give a certain length of time for marking the location. Where there is no statutory regulation it is usually held that the prospector has a reasonable time in which to do so.[17] What is a reasonable time depends on the circumstances of the case, and is usually left to the jury,[18] although this rule is not uniform, and in some jurisdictions it is held to be a matter of law and decided by the court.[19] In Oregon, however, the court adopted the contrary view and held that in the absence of the statutory provisions *no* time was allowed after discovery for marking the location.[20]

The effect of these statutes and decisions is to reserve, during the time after discovery allowed for making the claim, a circular area of ground with the discovery as its center and the length of the claim that may be located as its radius, within which the location may be ultimately made.[21]

If the first locator does not make a legal "discovery" of mineral and is not in possession and working with the object of making such discovery, the ground may be located and held by a second locator who makes a legal "discovery" of mineral therein.

[16] *Snyder* on Mines, sec. 358; *Burt* vs. *McDonald*, 2 Idaho, 643, 33 Pac., 49; *Omar* vs. *Soper*, 11 Colo., 380, 18 Pac., 443; *Murley* vs. *Ennis*, 2 Colo., 300; *Gleeson* vs. *Martin White M. Co.*, 13 Nev., 442; *Golden Fleece M. Co.* vs. *Cable Cons. M. Co.*, 12 Nev., 312; *Marshall* vs. *Harney Peak M. Co.*, 1 S. D., 350, 47 N. W., 290; *Belk* vs. *Meagher*, 104 U. S., 279; *Erhard* vs. *Boaro*, 113 U. S., 527; *Cosmos, etc., Co.* vs. *Eagle, etc., Co.*, 112 Fed., 4 (14); *Crossman* vs. *Pendery*, 8 Fed., 693.

[17] *Doe* vs. *Waterloo M. Co.*, 70 Fed., 11.

[18] See authorities on p. 119.

[19] *Patterson* vs. *Hitchcock*, 3 Colo., 533.

[20] *Patterson* vs. *Tarbell*, 26 Ore., 29, 37 Pac., 76.

[21] *Sanders* vs. *Noble*, 22 Mont., 110, 55 Pac., 1037, 1046; Lindley on Mines, sec. 342.

IX

Marking the boundaries; notices; posting; recording; relocating claims; representation work; how possessory title may be lost; forfeiture; "advertising out"; estate of owner of mining claim; patenting; coal land.

IN making a location the only things required by the United States statute are: (1) discovery, and (2) marking boundaries. In addition to these, by general custom, and in certain States by statute, the following are required: (3) posting notice, and (4) filing and recording notice.

We have already discussed discovery and will now take up the marking of boundaries, leaving the question of the various kinds of notice required for subsequent attention.

Marking the Boundaries

The requirement of the United States statute is that, "The location must be distinctly marked on the ground so that its boundaries can be readily traced." In nearly all of the mining States statutes giving in detail the requirements for marking the location are in force, and these must be followed, in the respective states.[1] These statutory requirements are given in the Appendix.

The object of the requirement of marking the boundaries is to give other persons information as to what ground is claimed; and, in the absence of a local statute, any kind of marking that will do this in a reasonable manner will be sufficient. It is usually done by planting stakes, erecting monuments of stone, blazing or cutting off or squaring a tree at the corners, etc., each of such markings containing some means of identification. If not otherwise directed by local statute, the stake is usually planted at the point of discovery and upon it a notice is placed containing a description of the claim as mentioned hereafter. Then stakes are planted, monuments erected, or trees blazed, etc., at each corner, and frequently also at the middle of each side and end line.

[1] *Mares* vs. *Dillon*, 30 Mont., 117, 75 Pac., 963.

Under the statute of 1866 the location might have any shape that the circumstances might suggest or the fancy of the locator bring about. Under this statute the lode was the principal thing, and the location was for so many feet on the lode; and when the location was patented such surface as the locator might desire for building, etc., was given to him, and then a straight line was usually drawn in the direction the lode was supposed to extend, giving the length claimed of the lode. An example of the curious shapes assumed by claims under this statute is shown in fig. 14. It was not necessary that the actual direction of the lode should correspond with the direction marked on the plat.

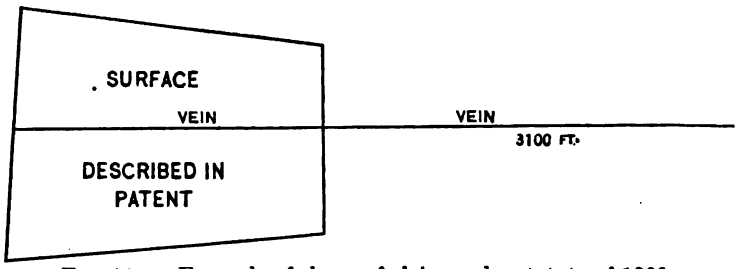


FIG. 14. — Example of shape of claim under statute of 1866.

The locator gained the right to the number of feet claimed on the lode whatever direction the latter might take.

How shall the lines of the location be laid if the surface is irregular? The Supreme Court has answered this question in *Flagstaff Silver Mining Co.* vs. *Tarbet*, 98 U. S., 463, in which the court says:

"We think that the intent of both statutes [1866 and 1872] is, that mining locations on lodes or veins shall be made thereon lengthwise, in the general direction of such veins or lodes on the surface of the earth where they are discoverable; . . . The most practicable rule is to regard the course of the vein as that which is indicated by surface outcrop, or surface explorations and workings. It is on this line that claims will naturally be laid, whatever be the character of the surface, whether level or inclinal."

Under the law of 1872 the ideal location was that of a parallelogram with its longer sides approximately parallel to the course of the vein on which the location was made. It is repeatedly stated by the courts that such is the intent of the statute.[2] The only statutory requirement as regards the relationship of the

[2] *Flagstaff, etc., Co.* vs. *Tarbet*, 98 U. S., 463 (467); *Argentine, etc., Co.* vs. *Terrible, etc., Co.*, 122 U. S., 478 (485); *Empire, etc Co.* vs. *Tombstone, etc., Co.*, 100 Fed., 910 (913).

lines to each other is, that the end lines should be parallel and straight.[3]

If a location is so made that the vein crosses the side lines instead of the end lines so that the located side lines become legal end lines and there is consequently a greater distance on each side of the vein to such legal side line than the 300 ft. allowed by law, what is the result? This question was before the appellate court of California [4] and the decision was that the rights of the locator are restricted to the area within 300 ft. of each side of the vein or lode. Morrison takes the same view.[5] But such a rule could not vitiate any part of a location after a patent had been issued for it.[6]

The side lines may be straight or broken or curved lines, and, of whichever kind, need not be parallel. For reasons, however, which will be apparent after the detailed discussion of the subject of extralateral rights, it is very advisable, when possible, that the side lines should also be straight lines and parallel. For the purpose of getting the boundary line of the claim parallel, the stakes or other markings may be placed on grounds previously located or even patented, if this can be done peaceably, but in such case the locator should only claim the vacant ground.[7] The location need not be rectangular in form, but the side lines must not be more than 600 ft. apart.

After a location has been legally made and properly marked the alteration or removal of the markings without the locator's fault will not deprive him of his rights, and there is no requirement that the locator or his assigns must maintain the same.[8]

On account of the difficulty of proof in case of litigation or when application is made for patent, the locator should, if possible, maintain the markings of his claim until patent is secured. If a locator is prevented from marking the boundaries of his claim by being driven off by threats or justifiable fear of violence, the time he is so prevented is not to be counted against him; and

[3] *Walrath* vs. *Champion, etc., Co.*, 171 U. S., 293 (311).

[4] *Southern Calif. Ry. Co.* vs. *O'Donnell*, 85 Pac., 932.

[5] Morrisson's "Mining Rights," 12th ed., p. 20; *Patterson* vs. *Hitchcock*, 5 M. R., 542.

[6] *Peabody M. Co.* vs. *Gold Hill M. Co.*, 97 Fed., 657.

[7] *Stevens* vs. *Williams*, 1 Morr. Min. Rep., 566, 1 McCrary, 480, Fed. Cas. No.13, 413; Monarch of the North Mining Claim, 8 Copp. L. O., 104; Lindley on Mines, secs. 365–366.

[8] *Jupiter M. Co* vs. *Bodie Cons. M. Co.*, 11 Fed., 666, 7 Sawyer, 96; *McEvoy* vs. *Hyman*, 25 Fed., 596, *Book* vs. *Justice M. Co.*, 58 Fed., 106; *Smith* vs. *Newell*, 86 Fed., 56; *Bryne* vs. *Slocson*, 29 L. D., 43.

where a claim is marked by a trespasser the true owner may adopt such markings as his own.[9]

In most of the mining States local statutes give a certain length of time after making a discovery within which the boundaries must be marked. These will be found in the Appendix. However, if no adverse rights have intervened, though the boundaries are not marked within the statutory period, a subsequent marking will be good and will hold the claim.[10] In the absence of requirements by local statute, the general rule is, that the locator has a reasonable time after making a discovery to mark his claim. The question of what is reasonable time in this connection has been a subject of much discussion by the courts, and different conclusions have been reached by different courts. In *Doe* vs. *Waterloo M. Co.*, 55 Fed., 111, the court held that 20 days was reasonable. In *Patterson* vs. *Tarbell*, 37 Pac., 76, the locator neglected to mark his boundaries for three months after the discovery. Another person entered peaceably and made a valid location. The court held that the last location was good. In *Burke* vs. *McDonald*, 33 Pac., 49, the locator, instead of continuing his work after a discovery, left to make other locations without marking his boundaries. The court held that he lost the claim to subsequent locators.

If some of the corners are inaccessible, or if for other good reasons the markings cannot be placed at the corner, they may be placed as near as possible and marked "witness corner," and the direction and distance of the real corner marked thereon.

If, by a mistake, more ground is included within the markings than the statute allows, the claim will only be void as to the excess.[11] The courts of Montana, however, have adopted the contrary view.[12]

Placer Claims. — Where the land has been surveyed, placer claims must conform to the survey subdivision, and they need not be surveyed for patent. The Land Office has held that a placer claim taken by legal subdivisions need not have its boundaries marked.[13] But in the courts the doctrine seems to be

[9] *Miller* vs. *Taylor*, 6 Colo., 41.

[10] *Brockbank* vs. *Albrun M. Co.*, 81 P., 863.

[11] *Richmond M. Co.* vs. *Rose*, 114 U.S., 576; *Parley's Peak M. Co.* vs. *Kerr*, 130 U.S., 256; *Howeth* vs. *Sullinger*, 113 Calif., 547; *Taylor* vs. *Parenteau*, 23 Colo., 368; *Eilers* vs. *Boatman*, 3 Utah, 159; *Jupiter M. Co.* vs. *Bodie Cons. Co.*, 11 Fed., 666.

[12] *Leggatt* vs. *Stewart*, 5 Mont., 107, 2 Pac., 320; *Hauswirth* vs. *Butcher*, 4 Mont., 299, 1 Pac., 714.

[13] *Reins* vs. *Murray*, 22 L. D., 409.

universally adopted that the boundaries of placer claims must be marked the same as lode claims, whether the land has been surveyed or not.[14]

NOTICES

There seems to exist considerable confusion in regard to the notices posted on mining claims, particularly in the small manuals issued for the guidance of miners. An examination of the subject shows that three kinds of notices are or have been used. The usage of these varies according to circumstances, local statutes, district rules, etc. They are:

1. A prospector's notice, posted before any discovery has been made, claiming the right to prospect at that vicinity for a given length of time.

2. A preliminary notice, posted immediately after the discovery, to hold the ground until the course of the vein is ascertained.

3. A final notice, giving the boundaries of the claim, and usually recorded.

The prospector's notice (1) is not required either by United States or State statutes, and is simply a warning that the prospector is in possession and working with the intention of making a discovery. It would probably strengthen the right of possession for the purpose of making the discovery discussed on page 114.[15]

The preliminary notice (2) is required by statute in some States, and where not required is recognized by the courts.[16] It is not required by the United States statute.

The final location notice (3) is usually required to be filed and recorded by local statutes in most of the States. It is not required by United States statutes nor, if used, is record of the same required by such statutes; but if it is recorded the United States statutes prescribe what it shall contain, viz.:

"All records made hereafter shall contain the name or names of the location, the date of the location, and such a description of the claim or claims

[14] *White* vs. *Lee*, 78 Calif., 503, 28 Pac., 363; *Gregory* vs. *Pershbacker*, 73 Calif., 109, 14 Pac., 401; *Garrard* vs. *Silver Peak M. Co.*, 82 Fed., 578; *Schwab* vs. *Bean*, 86 Fed., 41; *McCann* vs. *McMillan*, 129 Calif., 350, 62 Pac., 31; *Hauswirth* vs. *Butcher*, 4 Mont., 290, 1 Pac., 714; *Sweet* vs. *Webber*, 7 Colo., 443, 4 Pac., 752.

[15] *Gemmel* vs. *Swayne*, 72 Pac., 662.

[16] *Adam* vs. *Cumford*, 116 Calif., 495

located by reference to some natural object or permanent monument as will identify the claim."

Snyder argues that the above-quoted paragraph of the statute clearly implies that a record of the location notice is required [17]; but the courts have quite uniformly held that, in the absence of such requirement in the State statute or district rules, record of location notice is not necessary.[18] It is safer, however, to record the notice even if no district rule or State statute requires it. If there is no district recorder it may be recorded with the recorder of the county; and if there is a district recorder it may be advisable to record with both. In the districts and States where recording is expressly required the provisions of the district rules or the State statutes, as the case may be, must be followed. If a certain time is given for recording and the locator fails to record within such time, but afterward records his notice, it will be good, provided no adverse rights have intervened.[19] Also in some States the statutes require that the recorded notice should be sworn to or "verified." There has been considerable discussion as to the constitutionality of these statutes; but they have been upheld, and in the State of Montana a very strict construction of such statutes has been adopted.[20]

Under the provision of the United States statute and similar ones contained in most State statutes, that the recorded notice shall refer to such natural objects or permanent monuments as will identify the claim, there have been numerous decisions and much discussion as to what things answered these requirements. The tendency of the courts is to be liberal in the construction of records, and to hold the location valid if it is possible to do so.[21] A reference point frequently used is another known mining claim.

[17] Snyder on Mines, sec. 404.

[18] *Golden Fleece M. Co.* vs. *Cable Cons. Co.*, 12 Nev., 312; *Jupiter M. Co.* vs. *Bodie Co.*, 7 Sawy, 96, 4 Mont., 411; *Southern Cross M. Co.* vs. *Europa M. Co.*, 15 Nev., 383; *Brady* vs. *Husby*, 21 Nev., 453; 33 Pac., 801; *Mydenbauer* vs. *Stevens*, 78 Fed, 787; *Thompson* vs. *Spray*, 72 Calif., 528, 14 Pac., 182; *Souter* vs. *Maguire*, 78 Calif., 543, 21 Pac., 183; *Carter* vs. *Bacigalupi*, 83 Calif., 187, 23 Pac., 361; *Book* vs. *Justice M. Co.*, 58 Fed., 106; *Haws* vs. *Victoria M. Co.*, 160 U. S., 303; *Fraser* vs. *Sweeney*, 8 Mont., 508, 21 Pac., 20; *Flick* vs. *Gold Hill, etc., Co.*, 8 Mont., 298, 20 Pac., 807; *Quimby* vs. *Boyd*, 8 Colo., 104, 6 Pac., 462; *Allen* vs. *Dunlap*, 24 Ore., 229, 33 Pac., 675; *Seidler* vs. *Lajave*, 4 N. M. 369; 20 Pac., 789; *Anderson* vs. *Caughey*, 84 Pac., 223 (Calif. App.).

[19] *Preston* vs. *Hunter*, 67 Fed., 996; *Omar* vs. *Soper*, 18 Pac., 443; *Faxon* vs. *Barnard*, 2 McCrary, 44; *Mutchmore* vs. *McCarty*, 87 Pac., 85.

[20] See the Appendix for the State statutes; *Hickey* vs. *Anaconda Co.*, 81 Pac., 806 (Mont.).

[21] *Hammer* vs. *Garfield, etc., Co.*, 130 U. S., 291; *Jupiter M. Co.* vs. *Bodie, etc., Co.*, 11 Fed., 666, Sawy, 96.

This has been upheld in a number of cases.[22] Such natural objects or permanent monuments, such as a permanent stake, a rock monument, or a shaft sunk in the ground,[23] may or may not be on the ground located. The question of the sufficiency of the description of the claim is a fact, and should be left to the jury.[24]

If the locator makes his location properly, and files a proper copy of the notice with the proper officer, the negligence of such officer in making mistakes or in not recording it will not deprive the locator of his rights.[25]

Forms of notices and the States' statutes on the subject of notices will be found in chapters XXI and XXII and the Appendix.

The statute does not require a recorded location notice to contain a description of the boundaries of a claim. If it does contain a description of the boundaries, which does not agree with the markings on the ground, such erroneous description will be treated as surplusage, and the actual markings on the ground, if properly done, will control.[26]

Even though the claim was described as being in the wrong county, if otherwise properly described, by proper references, and recorded in the right county, the claim was held to be valid.[27] Monuments and markings control courses and distances.[28]

Where parties were instructed to relocate an old claim for the benefit of the former owners, but instead, located it in their own name, it was held that a trust resulted in favor of the previous owner.[29] Also a relocation by one standing in a fiduciary relation inures to the benefit of the *cestui que trust*.[30]

[22] *Upton* vs. *Larkin*, 7 Mont., 449; *Garfield M. Co.* vs. *Hammer*, 6 Mont., 53, 130 U. S., 291; *Metcalf* vs. *Prescott*, 25 Pac., 1037; *Southern, etc., Co.* vs. *Europa, etc., Co.*, 15 Nev., 383; *Russell* vs. *Chumasero*, 4 Mont., 309; *Dillon* vs. *Bayliss*, 27 Pac., 725; *Book* vs. *Justice M. Co.*, 58 Fed., 106.

[23] *Jupiter M. Co.* vs. *Bodie Cons. M. Co.*, 11 Fed., 666, 7 Sawy, 96; *North Noonday M. Co.* vs. *Orient M. Co.*, 1 Fed., 522, 6 Sawy, 299.

[24] *Gamer* vs. *Glenn*, 8 Mont., 371; *Flavin* vs. *Mattingly*, 8 Mont., 242; *O'Donnell* vs. *Glenn*, 8 Mont., 248; *Metcalf* vs. *Prescott*, 25 Pac., 1037; *Russell* vs. *Chumasaro*, 4 Mont., 309; *North Noonday & Co.* vs. *Orient & Co.*, 6 Sawy, 299; *Farmington, etc., Co.* vs. *Rymney*, 58 Pac., 832.

[25] *Shepherd* vs. *Murphy*, 58 Pac., 388; *Meyers* vs. *Spooner*, 55 Calif., 257; *Kelly* vs. *Taylor*, 23 Calif., 11; *Preston* vs. *Hunter*, 67 Fed., 996; *Weise* vs. *Barker*, 7 Colo., 178, 2 Pac., 919.

[26] *Gamer* vs. *Glenn*, 8 Mont., 371; *Russell* vs. *Chumasero*. 4 Mont., 309; *Meyers* vs. *Spooner*, 55 Calif., 257; *Eilers* vs. *Boatman*, 3 Utah, 159; *Upton* vs. *Larkin*, 7 Mont., 449; *Weise* vs. *Barker*, 7 Colo., 178; *Pollard* vs. *Shively*, 5 Colo., 309.

[27] *Metcalf* vs. *Prescott*, 25 Pac., 1037.

[28] *McEvoy* vs. *Hyman*, 25 Fed., 596; *Book* vs. *Justice M. Co.*, 58 Fed., 106; *Callacott* vs. *Cash M. Co.*, 8 Colo., 179; *Bell* vs. *Killcorn*, 28 Pac., 768; *Mydenbaur* vs. *Stephens*, 78 Fed., 787.

[29] *Hunt* vs. *Patchin*, 35 Fed., 816.

[30] *Lockhart* vs. *Rollins*, 21 Pac., 413; see also *Sever* vs. *Gregovich*, 16 Nev., 325. *Cestui que trust* is the phrase used in law to denote the person for whose benefit a trustee holds property. There is

How Locations are Held — Representation Work

The making of a valid location at any time during the year gives a possessory title that holds good until January 1 of the succeeding year. Thereafter $100 worth of work must be done annually on the claim to keep the title good. This is often called "representing the claim," or "representation work"; sometimes "assessment work" or "annual labor." This work need not be done until the end of the year for which it is due. If begun just before the end of the year, and continued until $100 worth of work is done, the claim will not be forfeited even though such work is not completed within the year for which the representation work is done.[31] Consequently the act of location alone may hold a mining claim for practically two years under the U. S. statutes. For example, if a location is made January 1, 1907, this will hold the claim until January 1, 1908. But the annual labor for 1908 need not be done until the end of that year, so that nearly two years may elapse before representation work becomes necessary.

Also if, after forfeiture, work is resumed and continued by the original locator before any one else has located the claim, this will preserve the original locator's rights.[32]

The work or improvements must be such as tend to develop the claim and must be *worth* $100 at the fair current market price for labor, etc. Evasions, such as counting the price of labor greatly in excess of the current rates, or being on the claim at midnight of December 31, and relocating the claim immediately after forfeiture and so attempting to hold it two more years without labor, are frauds, and if proved will not be upheld by the courts. If several claims are held in common, the work necessary to represent all the claims may be done on one, if the claims are contiguous [33] and the work tends to develop all of the claims.

The character of the work necessary is well stated by the

no word in the English language to designate such a person; hence, the use of the cumbersome Latin phrase cannot be avoided.

[31] *Jordan* vs. *Duke*, 53 Pac., 197; *Belk* vs. *Meagher*, 104 U. S., 279.

[32] R. S., sec. 2324; *Jupiter M. Co.* vs. *Bodie M. Co.*, 11 Fed., 666; *North Noonday & Co.* vs. *Orient M. Co.*, 1 Fed., 522; *Larkin* vs *Sierra Buttes, etc., Co.*, 25 Fed., 337.

[33] *Mt. Diablo M. Co.* vs. *Callison*, 5 Sawy, 539, 17 Fed. Cas., 918, No. 9886; *Jackson* vs. *Roby*, 109 U. S., 440; *Chambers* vs. *Harrington*, 111 U. S., 350, 3 Utah, 94; *Royston* vs. *Miller*, 76 Fed., 50; *Gird* vs. *California Oil Co.*, 60 Fed., 531; Copper Glance Lode, 29 L. D., 542, 481; *Stolp* vs. *Treasury Gold M. Co.*, 38 Wash., 619, 80 Pac., 817.

United States Supreme Court in *St. Louis Smelting Co.* vs. *Kemp*, 104 U. S., 636:

"Labor and improvements, within the meaning of the statutes, are deemed to have been had on a mining claim, whether it consists of one location or several, when the labor is performed or the improvements are made for its development, that is to facilitate the extraction of the metals it may contain; though in fact such labor and improvements may be on the ground which originally constituted only one of the locations, as in sinking a shaft, or be at a distance from the claim itself, as where labor is performed for the turning of a stream for the introduction of water, or where the improvements consist in the construction of a flume to carry away the débris or waste material."

A house built 200 ft. from the claim has been held not to be legal representation work, although for the use of the miners working on the claim.[34] Building a residence and blacksmith shop on a claim was held not to be a compliance with the law.[35] Cost of sharpening picks, when not proved to have been done on the claim, was not allowed to count.[36] Picking rock from the wall of the shaft or outcroppings on the claim from time to time, and testing the same for pay ore, was not allowed.[37] Expenditure of money traveling about regarding matters connected with the claim is not allowed.[38] But where there was machinery on the claim, and the mine was idle, the wages of the watchman was allowed.[39] Services in planning and superintending the erection of a mill and developing a mine is allowed, but not the services of a disbursing agent or an accountant.[40] Prospecting a claim or building a road giving access to a claim is allowed.[41]

In a number of States there are statutes requiring an affidavit that the necessary representation work has been done be filed in the recorder's office. But there is no penalty for not doing so, and if the work has in fact been done the claim will not be forfeited, although the affidavit is not made or filed. However, it is good policy, after having done the work required by law, to make or procure to be made an affidavit or proof of labor and

[34] *Pharis* vs. *Muldoon*, 17 Pac., 70, *Remmington* vs. *Baudet*, 6 Mont., 136.
[35] *Maxon* vs. *Wilkinson*, 2 Mont., 421.
[36] *Hirschler* vs. *McKendricks*, 40 Pac., 290.
[37] *Bishop* vs. *Baisley*, 41 Pac., 936.
[38] *Du Pratt* vs. *James*, 65 Calif., 555.
[39] *Lockhart* vs. *Rollins*, 21 Pac., 413; *Altoona, etc., Co.* vs. *Integral & Co.*, 45 Pac., 1047.
[40] *Rara Avis M. Co.* vs. *Bouscher*, 9 Colo., 385.
[41] *Mt Diablo M. Co.*, vs. *Callison*, 5 Sawy, 539.

file the same for record in the office where the notice of location is recorded. This should state the nature, value, cost, and time of doing the work, and that it was done for the owner of the claim.[42]

How Possessory Title May be Lost

Before taking up the subject of how the possessory title acquired by making a valid mining location may be converted into an absolute and indefeasible one by obtaining a patent, I will outline the ways by which the possessory title may be forfeited or lost.

The first way is by forfeiture on account of failure to comply with the requirements of the law in regard to perfecting a location, or failure to do the annual assessment work required by law. The effects and incidents of this have necessarily been discussed under the head of Representation Work and it is unnecessary to repeat what was there stated. If a forfeiture occurs and is tested in the courts, it must be pleaded and strictly proved.[43] Formerly the rule was well settled, that rights in a forfeited location could only be acquired *after* default by the original locator,[44] but this rule is unsettled by the late decision of *Lavagnino* vs. *Uhlig*, 198 U. S., 443, that right to the location accrues to a junior overlapping claim upon forfeiture of the senior location. In the later case of *Brown* vs. *Gurney*, 201 U. S., 184, the old rule was followed but *Lavagnino* vs. *Uhlig* was not expressly overruled. Future decisions of the Supreme Court will be necessary to remove the uncertainty.[45]

One of the special methods of forfeiture is the statutory provisions for the case of a claim owned by several persons in common, one or more of whom refuses or neglects to perform or pay for his share of the annual representation. The provisions of the statute in this regard are so clear that a judicial interpretation thereof has apparently never been required. They are as follows:

"Upon the failure of any one of any co-owners to contribute his propor-

[42] For form of this affidavit see p. 324.

[43] *Wulff* vs. *Manuel*, 9 Mont., 276, and citations there given; *Bishop* vs. *Baisley*, 41 Pac., 936.

[44] *Hammer* vs. *Garfield, etc., Co.*, 130 U. S., 291; *King* vs. *Edwards*, 1 Mont., 235; *Morenhaut* vs. *Wilson*, 52 Calif., 263; *Oscamp* vs. *Crystal River Co.*, 58 Fed., 293; *Wiseman* vs. *McNulty*, 25 Calif., 230; *Lockhart* vs. *Farrell*, 86 Pac., 1077.

[45] It is stated (Mining and Scientific Press, Vol. 44, p. 752, June 15th, 1907) that the case of *Lockhart* vs. *Farrell*, 86 Pac., 1077, which involves the exact point, has been appealed from the Supreme Court of Utah to the Supreme Court of the United States. See also *Ambergris M. Co.* vs. *Day*, 85 Pac., 109, and *Montague* vs. *Lahay*, 2 Alaska, 575; *Oscamp* vs. *Crystal, etc., Co.*, 58 Fed., 293; *Belk* vs. *Meagher*, 104 U. S., 279; *Johnson* vs. *Young*, 18 Colo., 625; *Omar* vs. *Soper*, 11 Colo., 380, 18 Pac., 443.

tion of the expenditures hereby, the co-owners who have performed the labor or made the improvements may, at the expiration of the year, give such delinquent co-owner personal notice in writing, or notice by publication in the newspaper published nearest the claim, for at least once a week for 90 days, and if at the expiration of 90 days after such notice in writing or by publication such delinquent should fail or refuse to contribute his proportion of the expenditure required of this section, his interest in the claim shall become the property of his co-owners who have made the required expenditure." [46]

In mining communities, this is commonly called "advertising out." This provision extends to tunnel claims.[47] This right only exists in favor of a person who was a co-owner for the year in which the work was done and at the time the notice was given.[48]

It has been held that this statutory remedy in favor of co-owners is exclusive and that there is no implied contractual or personal liability by each owner for his share. The only recourse of the co-owner or co-owners doing the required work is to forfeit the property by the above statutory method.[49] Many of the States have enacted statutory provisions concerning this form of forfeiture, usually in the exact language of the United States statute. Their validity is doubtful, except possibly as to the provisions for recording proof of notice.[50]

The second way in which rights in a location may be lost is by abandonment. Abandonment is the voluntary relinquishment and giving up of the possession of a claim, with the *intent* of no longer occupying or retaining the same. It is a matter solely of the intention of the owner, and is a question of fact for the jury.[51]

This intention, however, must be evidenced by some act, which act may consist of statements or admission, or physical acts, such as leaving the claims and removing all tools therefrom. But proof of any of these things would not be *conclusive* evidence of intention. It would only be *persuasive* evidence tending to prove it; still in the absence of other evidence giving some other reasonable explanation it would probably be sufficient proof of intention to sustain a forfeiture. The courts have held that

[46] R. S., sec. 2324.

[47] Copp's "Mineral Lands," p. 222.

[48] *Turner* vs. *Sawyer*, 150 U. S., 578.

[49] *Turner* vs. *Sawyer*, 150 U. S., 578; *Elder* vs. *Horseshoe, etc., Co.*, 9 S. Dak., 336, 70 N. W., 1060; *Billings* vs. *Aspen, etc., Co.*, 51 Fed., 338.

[50] Snyder on Mines, secs. 533–534.

[51] *Aye* vs. *Philadelphia, etc., Co.*, 44 Atl., 555; *Davis* vs. *Dennis*, 85 Pac., 1079 (Wash.).

abandonment consists of an intent coupled with a voluntary act in pursuance thereof.[52] It cannot be presumed from mere lapse of time.[53] But lapse of time is persuasive evidence of its existence.[54] The statute of limitations has nothing to do with it.[55] Neither does it involve an estoppel. The intention to abandon operates instanter, and the land reverts to its original status as a part of the public domain.[56]

Going away from a claim without intention of returning to it, regardless of what becomes of it, amounts to an abandonment.[57] If the owner or claimant of a mining claim consents to or encourages the locating of the claim by another person, this amounts to an abandonment of all rights therein by such previous owner or claimant.[58] If, after working on a claim and concluding it is worthless, the locator destroys the monuments and goes away with the intention of having nothing more to do with the same, it is an abandonment.[59] If the owner of a claim moves his effects from it and absents himself for two years, and knowingly allows a purchaser under an erroneous sale to work on the claim with the intention of only asserting rights thereto if it should turn out to be valuable, the original owner's action would constitute an abandonment in law.[60] Evidence of the general belief of the community is not sufficient to prove an abandonment.[61] Being driven away from the claim by Indians is not an abandonment.[62] One person cannot prevent another from going on a claim and then allege abandonment against him.[63] A conveyance or gift of a claim is not an abandonment.[64] Leaving tools at a mine

[52] *Larkin* vs. *Sierra Min. Co.*, 25 Fed., 337; *Mallett* vs. *Uncle Sam Min. Co.*, 1 Nev., 188; *Waring* vs. *Crow*, 11 Calif., 366; *Bell* vs. *Bed Rock Tunnel Co.*, 36 Calif., 214; *Jones* vs. *Mallory*, 45 Calif., 299; *Murley* vs. *Ennis*, 2 Colo., 300; *Davis* vs. *Dennis*, 85 Pac., 1079.

[53] *Partridge* vs. *McKinney*, 10 Calif., 180.

[54] *Mallett* vs. *Uncle Sam Min. Co.*, 1 Nev., 188.

[55] *Davis* vs. *Butler*, 6 Calif., 510.

[56] *Come* vs. *Aberto*, 76 Pac., 369 (Colo.); *Derry* vs. *Ross*, 5 Colo., 295; *Miller* vs. *Homley*, 74 N. W., 980; *Brown et al.* vs. *Gurney et al.*, 26 Sup. Ct., 509 (U. S. Supreme Ct., 1906).

[57] *Derry* vs. *Ross*, 5 Colo., 295; *Stone* vs. *Geyser Co.*, 52 Calif., 315; *Bell* vs. *Bed Rock, etc., Co.*, 36 Calif., 214.

[58] *Come* vs. *Aberto*, 76 Pac., 369.

[59] *Kinney* vs. *Fleming*, 56 Pac., 723.

[60] *Trevaskis* vs. *Peard*, 111 Calif., 599.

[61] *Phenix Mill Co.* vs. *Lawrence*, 55 Calif., 143.

[62] *Morenhaut* vs. *Wilson*, 52 Calif., 263; *Taylor* vs. *Middleton*, 67 Calif., 656

[63] *Craig* vs. *Compton*, 10 Calif., 517; *Miller* vs. *Fletcher*, 101 Calif., 142; *Garvey* vs. *Elder*, 109 N. W. 508.

[64] *Little Pittsburg M. Co.* vs. *Annie M. Co.*, 17 Fed., 57; *Manuel* vs. *Wulff*, 152 U. S., 505; *Richardson* vs. *McNulty*, 24 Calif., 339.

tends to disprove abandonment. Neither forfeiture nor abandonment becomes operative until some person in good faith has made an entry and relocated the property in the manner required by law on previously unclaimed land.[65] Until this has occurred, the original locator may reënter and resume his rights in the claim by virtue of the provision of the statute that claims on which there has been a failure to do the annual representation work shall only be open to location "provided that the original locators, their heirs or assigns or legal representatives, have not resumed work upon the claim after failure and before such, location."[66]

What constitutes such a "resumption" as will prevent a forfeiture is an unsettled question. About the only general rule that can be laid down about it is, that the first owner must have begun work in good faith with the *bona fide* intention of continuing it until the $100 worth had been completed.[67] Where the locators of a claim were at work on the thirty-first day of December, and that night left their tools in the cut intending to resume work next morning at the usual time, which they did, their possession and work were in law continuous; and one who made a relocation in the night during their absence was a trespasser and acquired no rights by such relocation.[68]

It has been held that it is sufficient to resume work after the initial acts of the relocation had been done, but before the location was completed according to law[69]; but this seems to be an erroneous and unreasonable construction of the statute. If the ground is forfeited, it is the same as any other unappropriated part of the public domain, and the prospector has the same rights therein. Consequently, if the acts of a second location were begun before resumption of work by the original locator and afterward completed according to law, such resumption pending the second location should not deprive the second locator of his rights.[70] It has been held that the original locator may relocate

[65] *Crown Point M. Co.* vs. *Crismon*, 65 Pac., 87; *Beals* vs. *Cone*, 62 Pac., 948; *Lakin* vs. *Sierra Buttes Co.*, 25 Fed., 337; *Lacy* vs. *Woodward*, 25 Pac., 785.

[66] R. S., sec. 2324.

[67] *McCormick* vs. *Baldwin*, 104 Calif., 227, 37 Pac., 903; *Hanaker* vs. *Morton*, 11 Mont., 91, 27 Pac., 397.

[68] *Willett* vs. *Baker*, 133 Fed., 937.

[69] *Jordan* vs. *Duke*, 53 Pac., 197.

[70] *Pharis* vs. *Muldoon*, 17 Pac., 70; *Slavonian Co.* vs. *Perasich*, 7 Fed., 331; *Du Pratt* vs. *James*, 65 Calif., 555.

a claim which he has lost by abandonment or forfeiture, if such relocation is made in good faith and not merely for the purpose of avoiding the representation work.[71] In spite of the holding of the cases just cited, Lindley[72] and Morrison[73] in their treatises on mining law hold that there is a distinction between the rights of the original locator and third parties in the above circumstances; that for the original locator to relocate a claim is an evasion of the requirements of the statute as to representation work, and is a plain fraud and therefore void. On principle this would seem to be the correct view. Snyder[74] takes the contrary view, holding that, upon forfeiture, the land is again public domain open to relocation by any one, not excluding the former locator.

In making a relocation the discovery and monuments (with new notices placed thereon) of the former locator may be adopted; but where the local statute requires a 10-ft. shaft or other preliminary work, the old shaft must be sunk 10 ft. deeper or a new shaft dug, and the recorded notice should state that it is a relocation unless the original location was invalid.[75] A relocation does not relate back to the original as does an amended location. Under the relocation none of the work done under the original location can be counted, but the full $500 worth of work must be done to entitle the claimant to a patent.[76] So long as a prior location of a mining claim subsists no rights in any of the ground covered by such claim can be acquired by a junior locator, because "mining claims are not open to relocation until the rights of a former locator have come to an end."[77]

After the issuance of a certificate of purchase in a proceeding to obtain a patent, claims are subject neither to forfeiture nor relocation.[78]

Estate of Owner of Mining Claim

Although a location is held by a possessory right, and this right is maintained by the performance of a certain amount of

[71] *Warnock* vs. *De Witt*, 40 Pac., 205; *Cheesman* vs. *Shreeve*, 40 Fed., 787.

[72] Lindley on Mines, sec. 405.

[73] Morrison's "Mining Rights," 12th ed., p. 112.

[74] Snyder on Mines, sec. 583.

[75] *Little Gunnel Co.* vs. *Kimber*, Fed. Cas., 8402; *Armstrong* vs. *Lower*, 6 Colo., 393.

[76] *Golden Fleece, etc., Co.* vs. *Cable, etc., Co.* 12 Nev., 312; *Belk* vs. *Meagher*, 104 U. S., 279; *Erhardt* vs. *Boaro*, 113 U. S., 527; *Ferguson* vs. *Belvoir, etc., Co.*, 14 L. D., 43.

[77] *Porter* vs. *Tonopah, etc., Co.*, 133 Fed., 750; *Last Chance M. Co.* vs. *Bunker Hill, etc., Co.*, 49 Fed., 430; *Lockhart* vs. *Farrell*, 86 Pac., 1077 (Utah). But see p. 125 where doubt is explained.

[78] *Southern, etc., M. Co.* vs. *Sexton*, 82 Pac., 423 (Calif.).

labor on the location annually, the estate of the holder or owner of such claim is an estate of inheritance in land or "real estate." This estate may be sold on execution, but no dower right attaches thereto.[79] It is governed by the general rules of real property as to conveyance, descent, form of action concerning, etc., subject to the paramount title of the United States.[80] The rights of mineral locators are of as high an order as those of agricultural settlers or homesteaders.[80a] However, in Oregon and Washington mining claims have been held to be personal instead of real property.[81]

Where the locator of a mining claim on public land has complied with all the conditions necessary to entitle him to a patent, his estate in the land is not perceptibly different from that acquired by an entryman of agricultural land.[82]

PATENTING

When a location is made, and representation work performed according to law, the locator or his heirs and assigns can hold the property indefinitely and need never obtain a patent therefor. However, if the development proves the property to be of value it is usually advisable to obtain a patent from the Government, which gives an absolute title in fee to the owner the same as agricultural land, but subject to the statutory extralateral rights of other claims. This conveys to the grantee all the estate of the United States in the surface, and all beneath save what is excepted by the United States mining statutes. The patent is

[79] In law an *estate* in land is the interest or right that any person has in such land considered with reference to the extent, nature, quality, and degrees of such interest.

Considering interests in land, with reference to the quantity of interests that persons may leave therein, they are divided into:

(1) *Estates of Freehold.* — These are estates of indefinite duration such as during the life or lives of some person or persons, or during a man's lifetime, then devolving to his heirs, so long as any heirs exist.

(2) *Estates of less than freehold*, which are chiefly such as grow out of contract and endure only for a fixed period or during the will of some person.

An estate of inheritance is a variety of freehold estate, and is such a one that not only does the tenant hold it during his life, but after his death it vests by operation of law in his heirs. It is subject to execution because it is property; and property in general is subject to be sold on execution to satisfy debts. But a mining claim, although an estate of inheritance, is only an estate of possession, being dependent upon the performance of annual labor to the amount of $100 to hold the same; therefore no dower rights attach. *Belk* vs. *Meagher*, 104 U. S., 279; *Forbes* vs. *Gracey*, 94 U. S., 763; *Gwillim* vs. *Donellan*, 115 U. S., 45.

[80] *Roseville, etc., Co.* vs. *Iowa Gulch Co.*, 15 Colo., 29; *Bakersfield, etc., Co.* vs. *Kern County*, 77 Pac., 892; *Butte Co.* vs. *Frank*, 65 Pac., 1.

[80a] *Southern Calif. Ry. Co.* vs. *O'Donnel*, 85 Pac., 932.

[81] *Herron* vs. *Eagle, etc., Co.*, 61 Pac., 417; *Phœnix, etc., Co.* vs. *Scott*, 54 Pac., 777.

[82] *Tyee Consol. M. Co* vs. *Langsteat*, 136 Fed., 124, 69 C. C. A., 548.

conclusive evidence, except when directly attacked for a fraud, that all steps antecedent to its issue have been properly taken and also as to the character of the land, and relates back to the time of the original location so as to exclude all attempted intervening rights.[83]

But the Government may set aside a patent for misrepresentation knowingly and fraudulently made by an applicant as to discovery of mineral form in which it occurs (*e.g.*, lodes or placers), etc. But fraud must be shown by clear and convincing proof.[84]

All of the rules of real property apply to patented mining claims, except so far as modified by the statutory provisions as to extralateral rights, etc. They are subject to the laws of descent, distribution, and dower, are liable to taxation and to be sold on execution the same as other real property.[84a]

Coal Land

Coal land is mineral land within the meaning of the general land laws.[85] There is no discovery required as under the mineral law, no staking of boundaries, or recording of a certificate of location; but the land must be proved to be more valuable for its coal than for any other purpose, and that it is sufficiently valuable to be worked as a mine. The fact that there are surface indications of the existence of a vein does not constitute a mine, or prove that the land is sufficiently valuable on account of its coal deposits to be worked as a mine.

The statute and the Land Office rules and regulations (given in the Appendix) are plain and explicit and give the procedure for obtaining coal land so fully that any further discussion thereof here is unnecessary.

[83] *Kahn* vs. *Old Telegraph M. Co.*, 2 Utah, 174; *Chambers* vs. *Jones*, 42 Pac., 758; *N. P. Ry. Co.* vs. *Cannon*, 54 Fed., 252; Smokehouse Lode Cases, 6 Mont., 397; *Talbott* vs. *King*, 6 Mont., 76; *Golden Reward M. Co.* vs. *Buxton, etc., Co.*, 79 Fed. 868.

[84] *U. S.* vs. *Iron Silver M. Co.*, 128 U. S., 673.

[84a] See chap. xxvi, p. 334, for the procedure and forms for obtaining a patent to mineral land.

[85] *Mullan* vs. *U. S.*, 118 U. S., 271.

X

Scientific definition of a vein; fissure vein; faults; contact veins; gash vein; segregated vein; reef; chute; replacement veins; stockwork; pipe veins and other unnecessary terms.

Scientific Definition of a Vein

SECTION 2320 of the Revised Statutes provides that "no location of a mining claim shall be made until the discovery of the vein or lode within the claim located." Section 2322 gives extralateral rights in "all veins, lodes, and ledges throughout their entire depth, the top or apex of which lies inside such surface lines extended downward vertically"; consequently, the first and most important question in construing this statute is: What is the meaning of these terms as used in the statute — what is included and what is not included? All rights in any but placer claims depend on the decision of these questions.

We will first consider the scientific idea of a vein, lode, or ledge, and afterward the legal view of what is meant by these words as used in the above-mentioned statutes, as such meaning is developed by the decisions of the courts. It is not easy to frame a definition that will accurately include all the varied uses of the word "vein" as this is employed in mining and geology. It is applied, especially when preceded by some qualifying adjective, very loosely to geological objects that often have little, if anything, in common. It seems that the best way to gain an understanding of the term is, instead of first attempting a general definition, to begin with the *fissure vein* and then develop the meaning of the word in its other applications from this, which is historically the original idea. But even "fissure vein" is a term of such general application that several articles in *Economic Geology*[1] have been devoted to attempts to define the phrase in its scientific use; and several of the writers agree that the only definition that would be applicable to all circumstances is "min-

[1] Vol. i, pp. 167, 169, 282, 286.

eral matter in a fissure," which is so general that it leaves our knowledge of the subject but little advanced.[2]

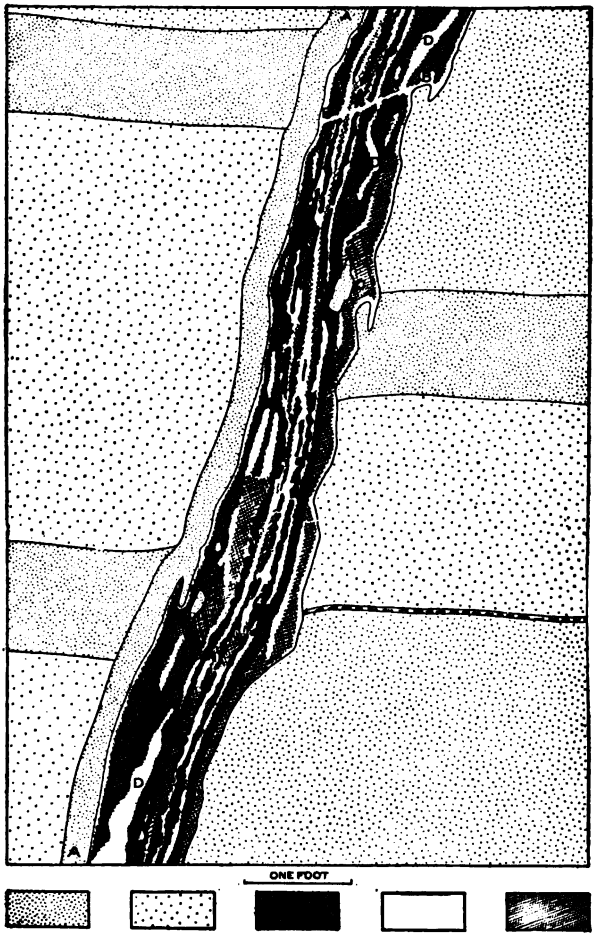


FIG. 15. — Fissure vein; strata faulted. Songbird vein, enterprise mine, Rico Mts., Colo. (After T. A. Rickard). From pt., 22d Ann., U. S. G. S.

[2] T. A. Rickard, commenting in the editorial columns of the *Mining and Scientific Press*, May 24, 1906, on the discussion in *Economic Geology*, referred to above, takes the ground that the term "fissure vein" means one thing to the practical miner and another to the technical writer on geology and mining, and consequently is uncertain and indefinite in meaning, and consequently should be discarded. In his usual forcible style he says:

"The definition of 'fissure vein,' strikes at the very roots of our ideas of lode formation, for each man's interpretation will be colored by his notions of the manner in which ore deposits are formed.

FIG. 16. — Photograph of Argonaut vein at 650 feet, Jackson, Amador Co., Calif.; quartz vein in county rock of dark clay slate with stringers of rich quartz in hanging vein, — a typical California gold-bearing vein.

From pt. II, 22d Ann., U. S. G. S.

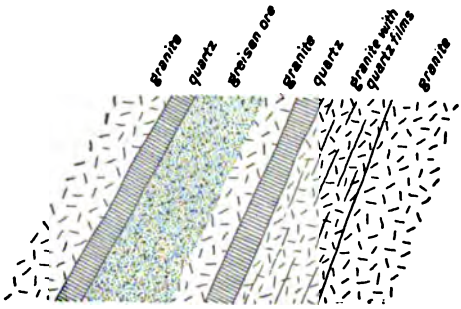


FIG. 17. — Greisen with cassiterite, North vein, Franklin Mt. (El Paso) Texas. It is generally agreed by geologists that the tin ore found in greisen (altered granite) is an example of the introduction of a metallic mineral by pneumatolysis. The tin was probably in the form of the fluoride or chloride which are volatile and after introduction was decomposed by steam into the oxide cassiterite. (See p. 136, note.)

From Bulletin No. 178, U. S. G. S.

But we do not talk to ourselves; therefore the significance of a word in technical literature will be that given to it by those who read, no less than by those who write. We cannot precede each use of a term by a reiteration of our definition of it. 'Fissure vein' retains the significance given to it by the miners of the Hartz and of Cornwall a hundred years ago, when geology was no more the science that goes by that name to-day than the old astrology is the astronomy of our time.

"To this old term there still cling the ideas of theories now obsolete; and you may take, and interpret the phrase as you will, the taint of those notions will cling round it still. A fissure was an open crack in the earth's crust, filled, according to Werner, from above; the Cornishman uses the word 'crevice' in place of fissure and he pronounces it like the French word *crevasse*, now largely restricted to the chasms made in the upper surface of a glacier. To him, and to other intelligent miners, a fissure or a crevice is a once yawning cavity now filled with ore; it originated by an earthquake shock or some other cataclysmic agent. Neither that comfortable word 'crustification,' nor that comprehensive term 'dynamic action,' has served to fill the gaps in his own imagination of how these things happened. The use of 'fissure vein' by geologists links their ideas to his, by misunderstanding. It is interesting to hear professors and writers defining words in familiar use among miners, but their definitions never reach far enough to modify the meaning of words already accepted and deeply charged with a significance older than any standard text-book. There will be a failure to connect. Start a *new* term fairly on its career and it has a chance to retain its identity from the lecture-room to the stope: but the words of the stope, once a part of the language, cannot be called upon to turn themselves inside out. The zebra can change his stripes more easily. 'Fissure vein' carries the meaning the miner has given to it for generations, and no symposium of geologists can change that. . . .

"Obviously, the only thing to do is to express modern ideas in terms that are unhampered by the baggage of discarded philosophies, not necessarily new words compounded of Greek and Latin, but English words not yet overworked in technology. . . . And if 'fissure vein' be a heritage from Von Cotta and De la Bêche, authors who wrote on ore deposits before the geology of mining was out of its swaddling clothes, what shall be said of the 'true fissure vein,' which has been the catch-penny phrase of every irresponsible promoter from the year 1?"

But Mr. Rickard fails to suggest a better or "unhampered" term, and "fissure vein" is very likely to maintain its prominent place in mining and geological writing even if there it means more than when used among the miners themselves.

We submit the following: *A fissure vein is a cleft or crack in the rock material of the earth's crust, filled with mineral matter different from the walls and precipitated therein from aqueous solution or introduced by sublimation or pneumatolysis.*[3]

The cracks or clefts may have been originally very small, but became enlarged by aqueous solutions dissolving away the wall rock, or certain minerals thereof, and afterward depositing other minerals in the enlarged cavity; or the wall rock, to varying depths, may have suffered chemical action, and have been replaced molecule by molecule by other minerals (metasomatic exchange) from the solutions without the formations of cavities in the rock. The above definition covers the cases to which the

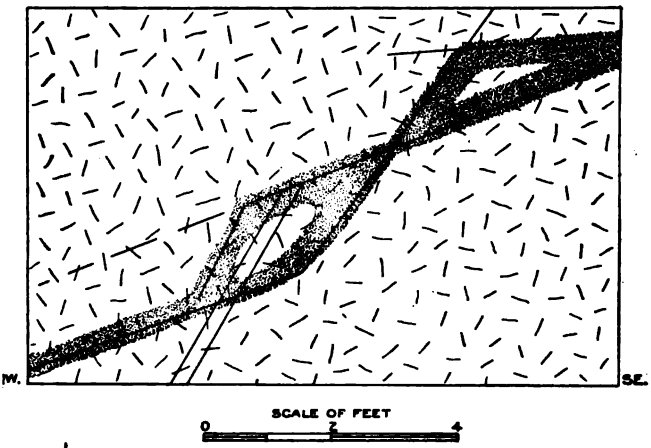


FIG. 18. — Example of joints or cracks in rocks and their relation to mineralization; tonalite at entrance of Mystery No. 1 tunnel, Monte Cristo, Wash.
From pt. II, 22d Ann., U. S. G. S.

term "fissure vein" can properly be applied. It is true that a fissure may be filled with molten matter, which is then sometimes, but improperly, called an eruptive vein. The proper name for such a geologic feature is *dike*, which has this definite meaning. Some of the standard works of geology, however, make this improper use of "vein" for a fissure filled with molten matter.

[3] By pneumatolysis is meant the combined action of gases and water in bringing mineral into the fissure, the chief gas concerned being water itself, under such conditions both of high temperature and high pressure that it is a true gas.

Dana terms granite dikes "granite veins," [4] although in another place [5] he correctly defines dikes as "fillings of fissures or open spaces made in any way and due to the intrusion of melted rock." [6]

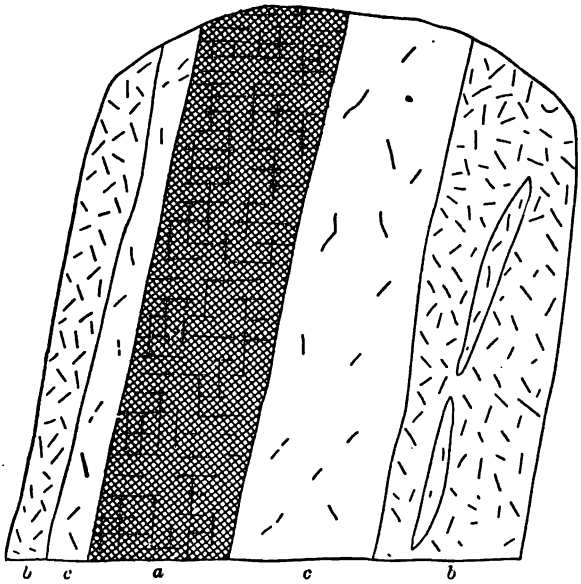


FIG. 19. — Vein following course of pre-existing dike. Trade Dollar vein, De Lamar district, Idaho; *a*, basalt dike; *b*, granite; *c*, quartz vein. (See p. 141.)
From Spurr; Geology Applied to Mining after W. Lindgren.

The Germans have only one word, *Gang*, for both a vein and a dike; but the superior resources of the English language in this respect should be accurately applied by confining the name "dike" to the contents of a fissure occupied by matter intruded in a molten condition, and "vein" to fissures filled by deposits from solutions, etc.

The most important and commonest cause of the formation of fractures and the resulting fissures and cavities in the rocks are the movements and disturbances that occur in the earth's crust from faulting; but, in addition, vacant spaces may be

[4] "Manual of Geology," 5th ed., 329.

[5] *Ibid.*, p. 327.

[6] One of the best definitions of a fissure vein is that given by Lindgren in "Genesis of Ore Deposits," p 500; "A fissure vein may be regarded as a mineral mass tabular in form, as a whole, although frequently irregular in detail, occupying or accompanying a fracture or set of fractures in the inclosing rock; this mineral mass has been formed later than the country rock, and the fracture, either through the filling of open spaces along the latter, or through chemical alteration of the adjoining rock."

produced by the shrinking of rock masses while cooling, or possibly while drying and by dolomitization.[7]

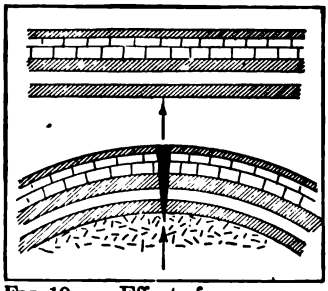


FIG. 19*a*. — Effect of pressure upward on earth's crust producing fissures. (See p. 142.)

From Stretch; Prospecting, Locating and Valuing Mines.

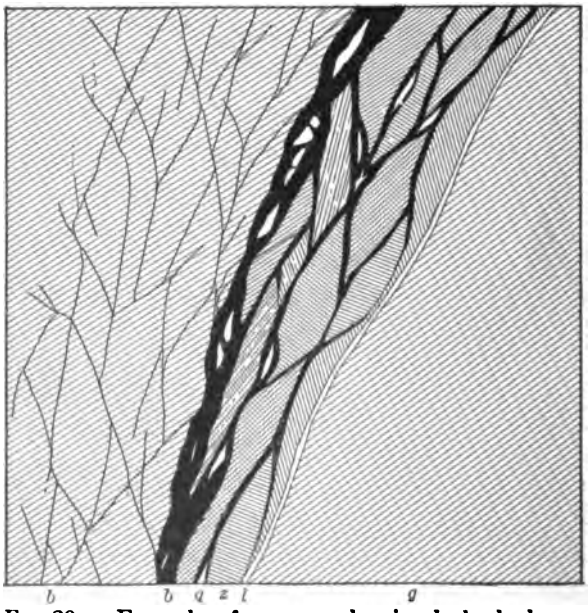


FIG. 20. — Example of compound vein: *b*, lead glance: *q*, quartz; *z*, blocks of decomposed gneiss; *l*, clay selvage; *g*, gray gneiss.

From Beck; Nature of Ore Deposits.

[7] Dolomitization is the conversion of ordinary limestone, which is impure calcium carbonate, into a mixture of calcium and magnesium carbonates that is called dolomite. This is brought about by the replacement, in various ways, of a part of the calcium of the limestone by magnesium. The

If a vein instead of consisting of a single fissure consists of a number of parallel fissures united by cross fissures, usually diagonal, it is called a vein system or *compound vein* (Figs. 20 and 21). Emmons insists that the term "lode" should be applied to such a vein system; but as ordinarily used, "lode" is synonymous with "vein."

FIG. 21. — Example of part of a compound vein or lode showing gray gneiss traversed by narrow stringers of galena and some quartz. The Traugott Spat of the Gesegnete Bergman's Hoffnung mine, near Obergruna.
From Beck; Nature of Ore Deposits.

Small fissures that have served to bring in mineralizing solutions and deposit them in favorable strata are called "verticals" in the Black Hills; and in Germany words denoting "feeders" and "droppers" are used for the same feature, passing down from the foot-wall of the vein (Fig. 22, p. 140).

resulting dolomite has a higher specific gravity than the original limestone and, consequently, there is a shrinkage in the process of conversion that causes numerous cracks or open spaces to be left in the stratum.

The faulting which causes fissures of all the various kinds concerned in vein formation is the result of the strains induced in the earth's solid crust by the shrinkage of the earth from

FIG. 22. — Photograph of "verticals" in porphyry; Little Bonanza mine, Black Hills, S. D. (See p. 139.)
From professional paper No. 26, U. S. G. S.

cooling, tidal action, or other cause: or by the readjustment of the pressure caused by the thinning of one portion of the crust by denudation and the thickening of another portion by the

deposition upon it of material transported by water, seasonal variations in the great polar ice caps, etc. Fissures may also be caused by earthquakes, and are the almost invariable accompaniment of all dynamic phenomena. They occur in all kinds of rocks, sedimentary, igneous, and metamorphic. If the formation of the crack or fissure is accompanied by a displacement of the strata so that the rock on one side of the fissure is moved differentially relative to the rock on the opposite side, it is a *fault*. The vertical displacement of the strata may range from zero to thousands of feet, and is technically termed the *throw* of the fault; the horizontal displacement is called the *heave*. The fault or fissure may extend in any direction. It may extend through the homogeneous mass of the solid rock or coincide with the bedding plane of sedimentary strata or with

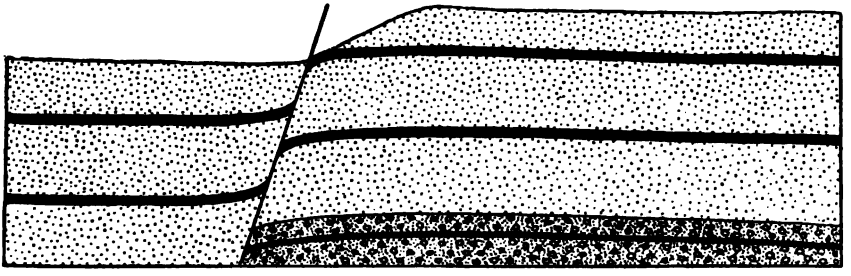


FIG. 23. — Normal fault; Palisades conglomerate underlying silt, Yukon district, Alaska. The part at the left is supposed to have slipped *down*.
From pt. III, 18th Ann., U. S. G. S.

the line of contact between an igneous intrusion and the rock into which the same was introduced, or it may accompany such bedding or contact plane for some distance and then pass off at an angle into the solid rock. After one set of faults has been formed and ore deposited therein, faulting may occur again, once or repeatedly, thus displacing the parts of the vein with reference to each other. This feature becomes of importance under the apex law, where the right to follow a vein depends on the continuity thereof. Such right will not be lost by a faulting of a vein, provided it can be traced by ore dragged into the fissure, or other means by which the substantial identity of the different parts of the vein may be established. The legal consequences of faults and faulting are treated under the subject of the legal definition of a vein, continuity, etc. Fractures and faults result

also when an eruptive mass forces its way outward from beneath and bulges up the surface formations; whether such eruptive mass bursts forth as a lava flow or does not reach the surface

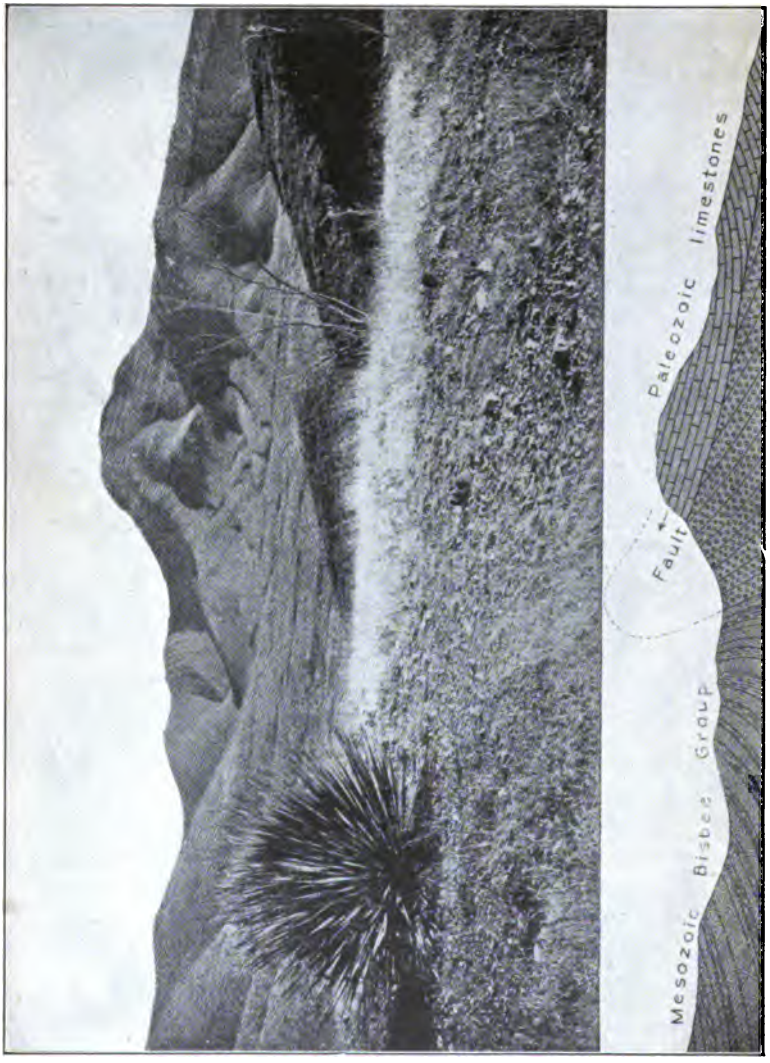


FIG. 24. — Overthrust fault; the upper photograph shows the topographic appearance produced; the diagram below shows the geological conditions. Gold Hill, Bisbee, Ariz. The limestone is supposed to have been thrust *up* over the underlying strata. (See p. 141.)
From professional paper No. 21, U. S. G. S.

but forms a laccolith beneath (Fig. 19*a*, p. 138. Also Figs. 23, p. 141; 24, p. 142; 25, p. 143; 27, p. 145).

Other cavities in which ore deposits are found are the result

of the solution of limestone or other soluble strata by the action of water in the vadose region. Such cavities may afterward be filled with mineral.

The minute interstitial cavities between the grains in the looser and more pervious strata of bedded rock may also form channels for ore-bearing solutions, which may be deposited therein to a sufficient extent to make an ore-body of the same. The term *interstitial vein* has been sometimes applied to the deposit formed in this situation, but the term *bedded vein*, mentioned below, is preferable.

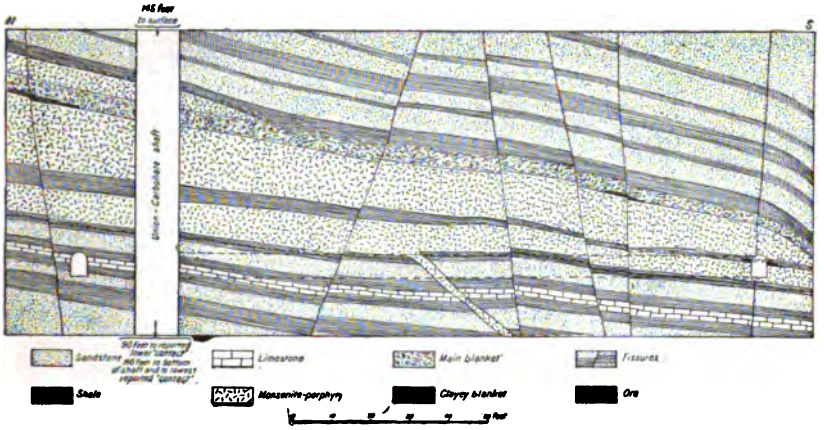


FIG. 25. — Examples of faulting in mining districts. Diagrammatic north-south section through the Union-Carbonate mine, Rico Mts., Colo., showing relation of fault fissures to the "blankets" and ore-bodies. (See p. 141.)
From pt. II, 22d Ann., U. S. G. S..

When a vein occupies the contact plane between sedimentary and igneous formations or between two different igneous rocks it is termed a *contact vein*. A contact vein may be a variety of fissure vein occupying a typical fracture from faulting between the different kinds of rock, or it may be a replacement vein formed by mineralized solutions percolating along the surface of the contact where the rock is usually more permeable, and there replacing one or both of the walls by metasomatic process (Figs. 44, p. 157, and 47, p. 160).[8] If a vein is not of great

[8] The United States Supreme Court, in the case of *Iron Silver M. Co.* vs. *Cheesman*, 116 U. S., 520, in speaking of veins, says: "Generally, the veins are found in what, when the mineral is taken out of them, constitute clefts or fissures in the surrounding rock, with a well-defined wall above and below of different kinds of rock, as porphyry, on one side, above or below, and limestone on the other." In other words, according to the Supreme Court, veins are generally contact veins; but in making this assertion the Court was mistaken. A majority of veins have both walls of the same kind of rock.

length and is limited (usually) to one stratum vertically, it is called a *gash vein*. These usually occur in sedimentary rocks, particularly limestone, and may have been caused by movements

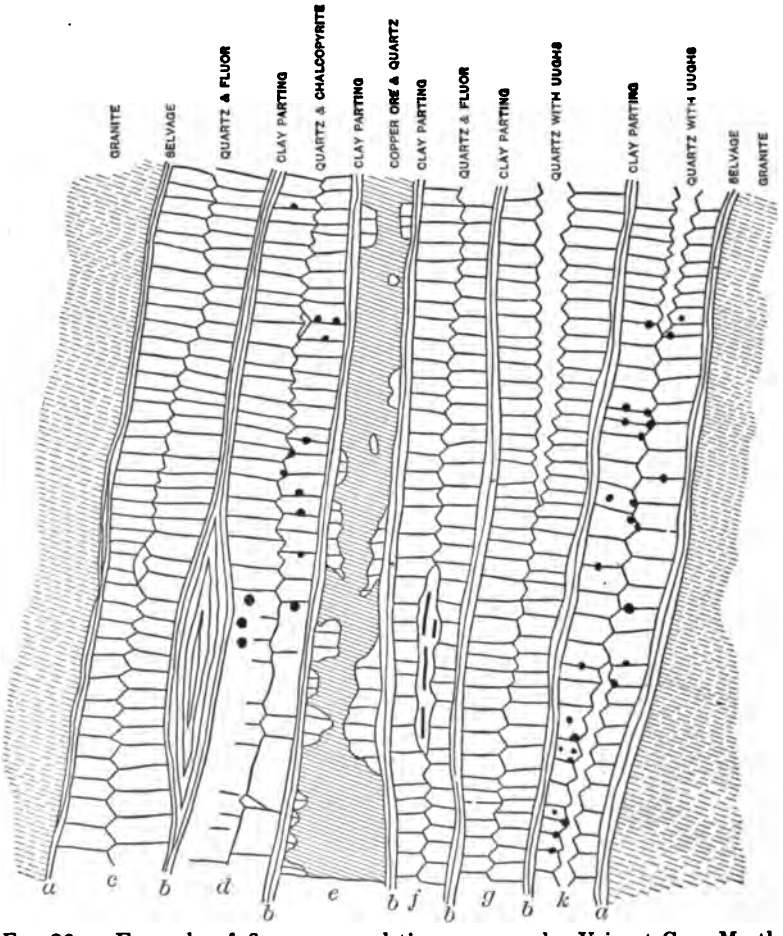


FIG. 26. — Example of fissure several times reopened. Vein at Carn Marth (England.) (See p. 141.)

From Phillips and Louis, Ore Deposits.

which have made a gentle fold and possibly other but not well understood causes (Fig. 29, p. 146).

Directing our attention successively to the various parts that go to make up a vein, we find as to the walls that they are usually very irregular, so that the vein in some places widens out and

again narrows or "pinches out" to a mere division plane in the rock. The wall rock itself is frequently called the "country rock," or more briefly the "country." A piece of the wall rock

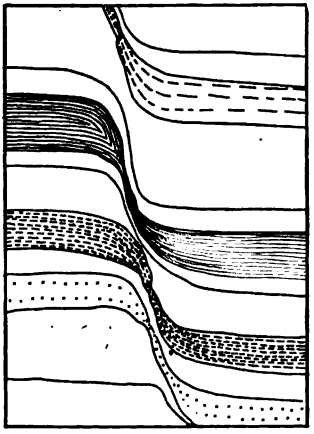


FIG. 27. — Section of flexure; the displacement is not sufficiently sharp to produce a rupture or fault. (See p. 140.)
From Beck, Nature of Ore Deposits.

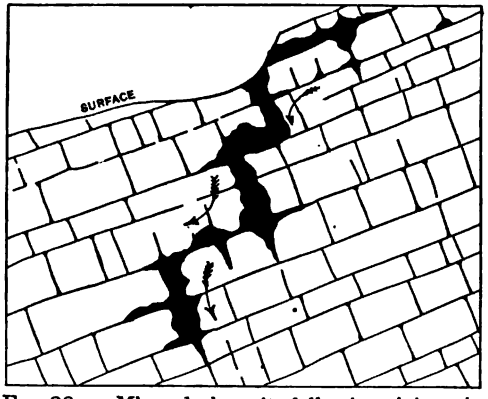


FIG. 28. — Mineral deposit following joints in limestone. (See pp. 142 and 143.)
From Stretch, Prospecting, Locating and Valuing Mines.

detached and fallen into the fissure is called by miners "a horse." After a fissure has been completely filled so that it is a vein, it may be reopened by some earth movement and new deposits

added. Repeated movements may break up the rock (country or vein matter, or both), making a rubble-filled fissure which upon the deposition of vein matter in the interstices is called a *brecciated vein*. A fissure may have numerous offshoots which the miner

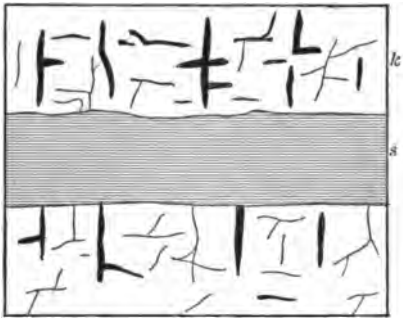


FIG. 29. — Gash veins, after Whitney; *k*, limestone with stringers of lead glance; *s*, slate. (See p. 144.)
From Beck; Nature of Ore Deposits.

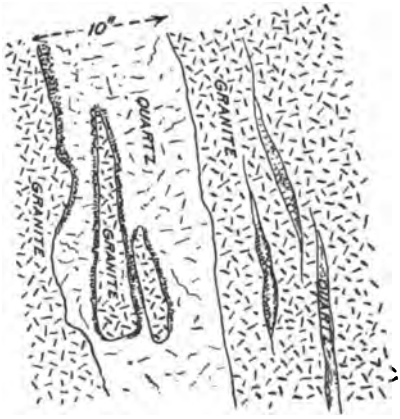


FIG. 30. — Vein of quartz with granite "horse"; narrow veinlets of comb quartz in hanging wall; Cumberlain vein, De Lamar district, Utah. (See p. 145.)
From pt. III, 20th Ann., U. S. G. S.

calls "spurs" or "angles," or may consist not of a single main fissure but of many small irregular fractures filled with mineral, which is called a *reticulated vein*. A system or group of veins, approximately parallel in direction, but which die out at various

lengths and are replaced by others on either side and are connected with each other by cross veinlets or stringers (usually diagonal), is called a *linked vein*. This name was first used by Becker in his "Geology of the Quicksilver Deposits of the Pacific Coast" (Monograph 13, United States Geological Survey, p. 410). The diagram which he gives is reproduced in Fig. 33, p. 149, which gives the idea better than verbal descriptions.

The movements of the rock walls against each other during the disturbances accompanying the creation of the fissures often produce smoothed, striated surfaces in the vein termed "slicken-

FIG. 31. — Brecciated vein structure.
(See p. 146.)
From Geikie, Structural and Field Geology.

sides." Veins are not always or even usually perpendicular, although they usually approximate more or less closely to the perpendicular. The angle between the vein and the horizontal is the "dip." The angle between the vein and the perpendicular is the "hade," or sometimes the "underlie." The wall on the lower side of a dipping vein is the "foot-wall" and on the upper side the "hanging-wall." Open cavities in a vein are called "vugs" ("vughs") or "druses." These are often lined with fine crystals. The line along which a lode or vein comes to the surface is called the "outcrop" ("outgoing" or "back"). The outcrop sometimes forms a ridge or reef if harder than the sur-

rounding rock, and a trench if more subject to decomposition. The outcrop of veins which contain pyrites usually consists of a mass of brown and rusty matter stained with, or perhaps chiefly composed of, iron oxides formed by the weathering of such iron minerals. This is termed "gossan" or sometimes the "iron hat" or "iron cap."

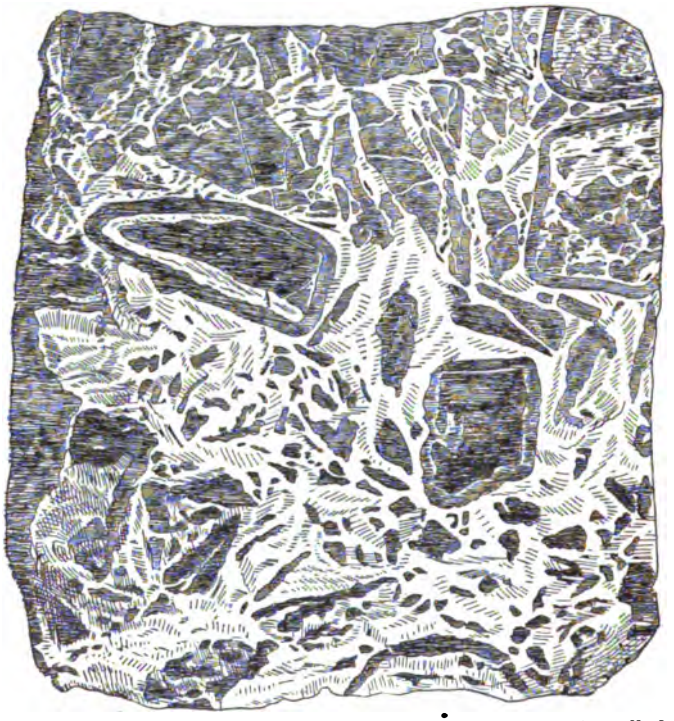


FIG. 32. — Example of brecciated deposit. The ore is called *ring ore* or *cockade ore* from the "Ring and Silverschnur mine" in the Harz. (See p. 146.)

From Beck; Nature of Ore Deposits.

If the mineral filling of a fissure vein is deposited in successive layers of different minerals, or different mixtures of minerals, as is frequently the case, it is often called a *banded vein* or *ribbon vein*, and if the layers are duplicated on both walls it is said to be a *symmetrical banded vein* (Figs. 35, p. 150, and 36, p. 151).

If the minerals in a fissure vein or lode are markedly crystalline with the long axes projecting toward the center, a section across the

vein will have a rough resemblance to a comb, and miners sometimes call them "comby" lodes (Figs. 26, p. 144, and 35, p. 150).

A *segregated vein* is one in which it is believed that the filling

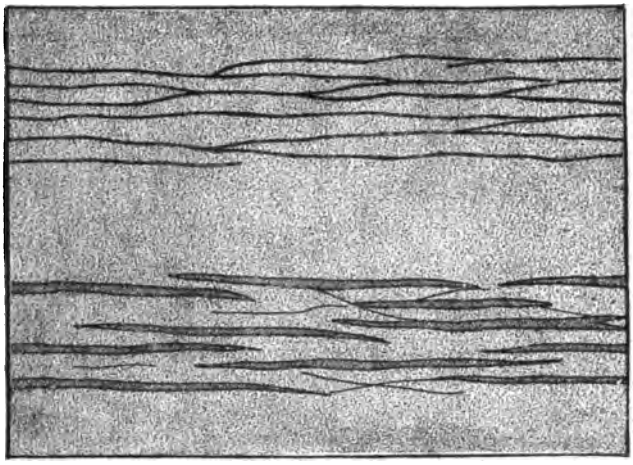


FIG. 33. — Linked veins, after Becker. (See p. 147.)
From monograph No. 13, U. S. G. S.

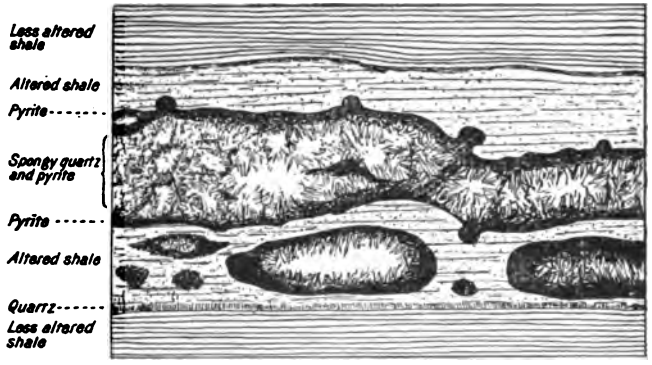


FIG. 34. — Replacement of a layer of shale by pyrite (black) and spongy quartz, showing characteristic small vugs with outer shells of pyrite and inner linings of quartz crystals. (See p. 147.)
From pt. II, 22d Ann., U. S. G. S.

has been derived from the adjacent country rock by the carrying in of mineral matter dissolved therefrom by water percolating through it into the fissure. This name is also applied to lenticular

bodies, which are limited on the strike and the dip, of quartz or other vein material which are sometimes found in igneous and metamorphic rocks (Figs. 37, p. 152, and 38, p. 153).

In Australia the word "reef" is the common name for an ordinary vein formation. Strictly speaking, the term should only be applied to a vein which projects above the surface, forming an elevated outcrop, but the Australian use seems to include all kinds of veins, underground as well as those projecting above the surface. Here also the name "saddle reef" is used, being applied to a particular form of vein which occupies curved, lenticular spaces at the highest points in anticline and the lowest points in synclines (Fig. 39, p. 153).[9]

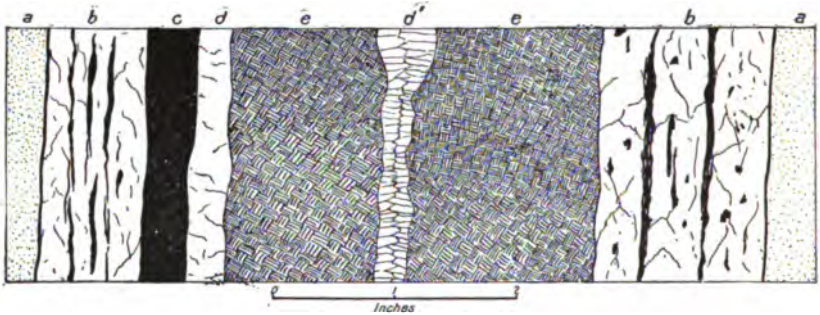


FIG. 35. — Cross section of banded vein near London shaft, Mineral Point, Colo.; *a*, county rock; *b*, quartz and chalcopyrite; *c*, tetrahedrite; *d d'*, quartz; *l*, galena. After Ransome. (See p. 148.)

From professional paper No. 47, U. S. G. S.

The mineral matter of the vein may be closely adherent to the walls, in which case miners graphically describe the ore as "frozen" to the country rock, or there may be a layer of clay or decomposed mineral matter between the vein contents and the wall that the miners call "gouge," "flucan," or "selvage" (Fig. 40, p. 154).

The "ore," or valuable mineral in the vein, is seldom deposited with any approach to uniformity throughout the vein matter, but usually occurs in localized strips and irregularly connected longitudinal bodies which are believed to represent the channels through which the larger part of the vein-filling solution flowed. These are usually extremely variable as to direction, size, shape, etc., and have numerous names applied to them by the miners, such as, "shoot" (also written "chute"), "pay streak," "ore chimney,"

[9] James D. Geikie, "Structural and Field Geology," p. 252.

or, if of great size and value, they may be called "bonanzas" (Figs. 41, p. 155, and 42, p. 156). At certain points in veins and ore-shoots, owing to the operation of some additional factor on the ore-carrying solution, such as an obstruction or pinching, causing a slower movement of the solution, or the coming in of a cross vein

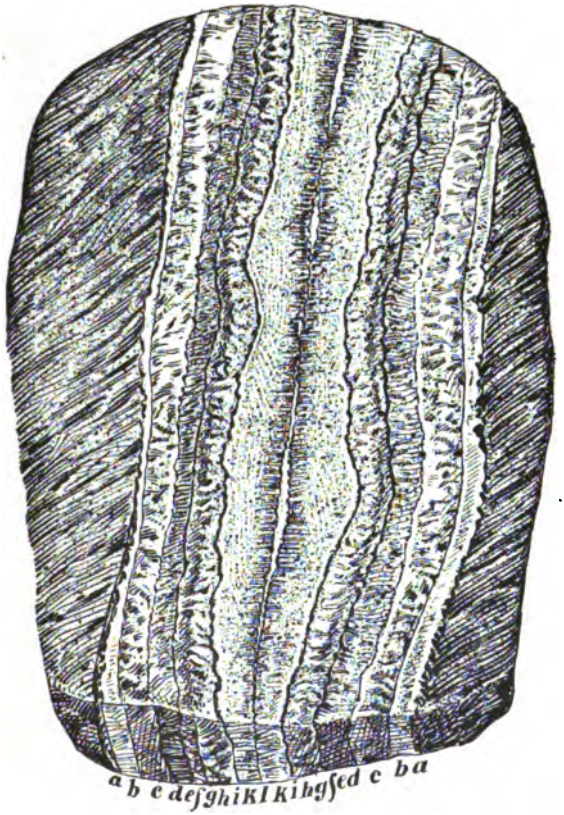


FIG. 36. — Example of symmetric vein structure. The Drei Prinzen Spat of the Churprinz, Freiberg. (See p. 148.)
From Beck; Nature of Ore Deposits.

carrying some new substance in solution that caused chemical precipitation, or the chemical influence of different kinds of wall rock, etc., the depositing influence for the valuable mineral has been especially localized so that very rich ore-bodies of comparatively limited extent have been formed which, when small, are called "pockets" or "bunches," or, if large, bonanzas. Bonanzas are

also formed by the process of secondary enrichment, as mentioned on page 80.

The contents of the vein, aside from the valuable metallic minerals which are the objects of mining, are called, collectively, "gangue," "veinstone," or sometimes "matrix." The common gangue minerals are: quartz, calcite, baryta, fluorspar. The

FIG. 37. — Quartz veins of segregation in Cambrian slate, Jamesville, N. Y. (See p. 149.)

From pt. III, 19th Ann., U. S. G. S.

metals in veins are usually originally in the form of sulphides, but are also found as arsenides, tellurides, chlorides and other similar chemical compounds; but in the upper or vadose region these have frequently been oxidized and changed to sulphates, carbonates, hydrous oxides, silicates, and oxides.

Considering the mineral deposited from solution or by pneumatolysis, we find that a fissure is not the only kind of a channel in which such deposition takes place, but that there are other ore-bodies derived from solution, the method of formation of

which is so closely analogous to fissure veins that such deposits are called veins. If the solutions have penetrated along porous planes of stratified rock and deposited mineral matter therein,

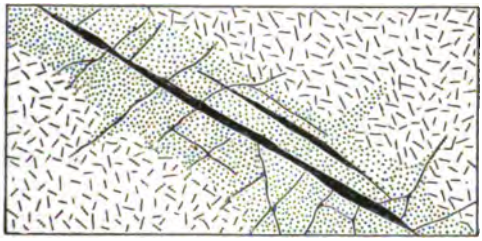


FIG. 38. — Segregated deposit; Great Flat lode (England). After C. Le Neve Foster. (See p. 149.)

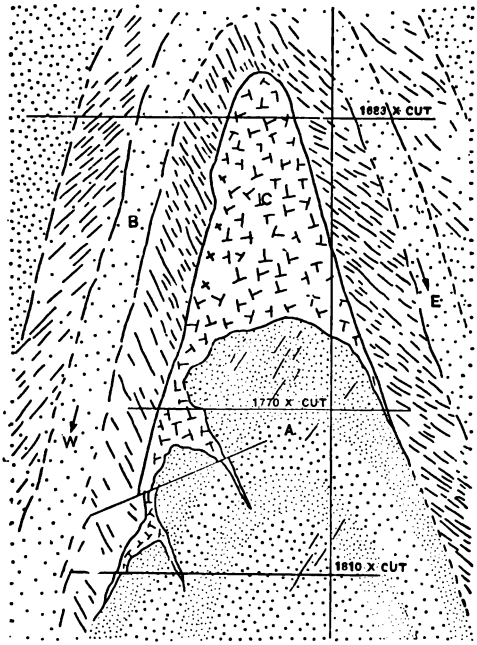


FIG. 39. — Example of saddle reef; section of New Chum Consolidated mine, Bendigo, Victoria. (See p. 150.)

From Beck; Nature of Ore Deposits after T. A. Rickard.

these are called *bedded veins*, or sometimes *blanket veins* (Figs. 44, p. 157, and 45, p. 158). The line of contact of an eruptive mass, whether in the form of dikes or masses of greater size, with the

rock through which they have been forced, often furnishes a channel for ore-bearing solutions, and the deposits formed therein are called *contact veins* (Figs. 44, p. 157, and 47, p. 160).

In many cases the deposition of mineral matter in pre-existing cavities is not the only process concerned in vein formation. A chemical exchange may occur between the solution and the wall rock, by which the wall rock, or sometimes only certain minerals thereof, have passed into solution and been carried away; while other minerals from the solution have been deposited in the place of those removed. This process is called "metasomatic replacement" and the result a *replacement vein* (or *substitution vein*), or a "replacement deposit." In such veins there are usually no

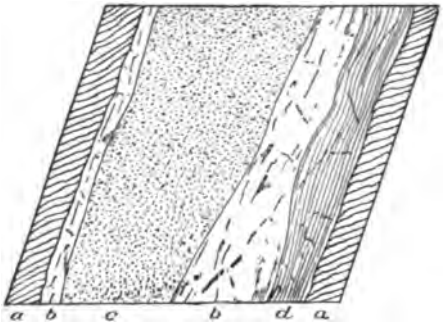


FIG. 40. — Example of vein with selvage or "gauge" at *d* of clay; *a*, slate; *b*, quartz; *c*, soft altered porphyry: Red Bay vein, Granite district, Blue Mts., Oregon. (See p. 150.)
From pt. II, 22d Ann., U. S. G. S.

well-defined walls, but the impregnation of mineral matter shades out gradually into the barren country rock (Fig. 48, p. 161).

The form of mineral deposit, or ore-body, called a "stockwork" consists, typically, of a mass of granitic rock, traversed by a network of small metalliferous veins, with ore both in the veins and impregnating the country rock. However, the term is also applied quite generally to any irregular, indefinite ore-mass consisting of country rock impregnated with ore and reticulated by veinlets of the same.[10] There does not appear to be much distinction between a stockwork and a reticulated vein, except that the former term would be more correctly applied to an irregularly

[10] Geikie, *op. cit.*, p. 294.

shaped mass of vein and impregnated country rock; while the latter would apply to such material in the form of an extended sheet (Fig. 49, p. 162).

The term "propylitic" may be applied to any kind of a vein,

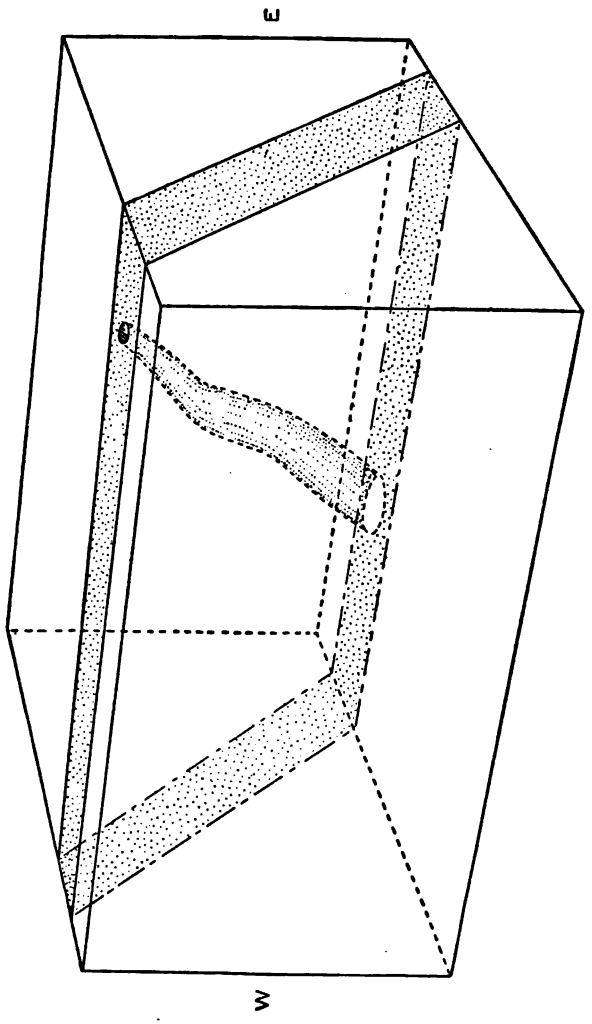


FIG. 41. — Sterogram of an ore shoot showing its relation to vein which, in this case is a stratum of quartzite; Doane mine, Encampment district, Wyoming. (See p. 150.)
From professional paper No. 25, U. S. G. S.

and means that the ore solution which has furnished the vein filling has also effected a decomposition or alteration of the wall rock as well, so that the walls of the vein consist of decomposed matter, talc, clay, etc.

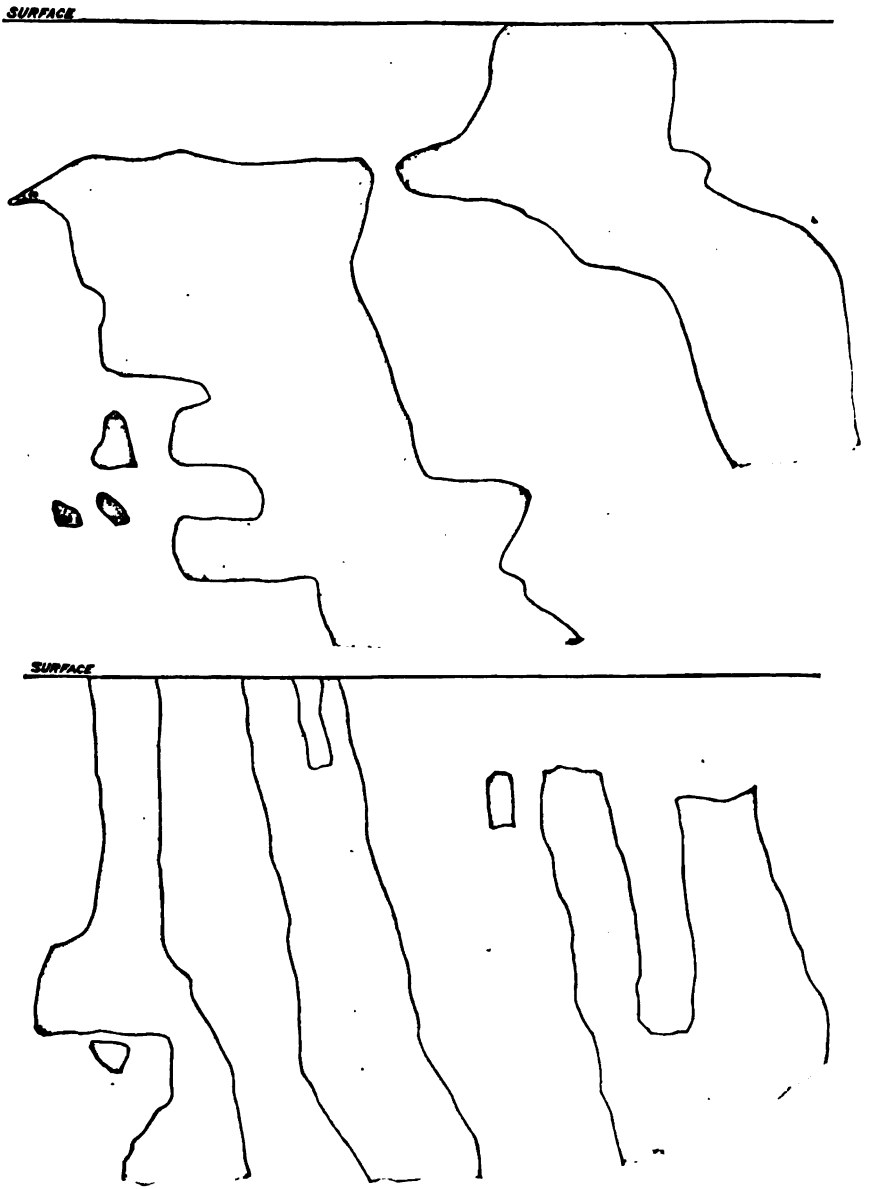


FIG. 42. — Shapes of ore shoots in Nevada City and Grass Valley, Calif., mines. (See p. 150.)

From pt. II, 17th Ann., U. S. G S.

Only a comparatively small proportion of the veins found in nature contain valuable minerals. Veins occur in rocks of all geo-

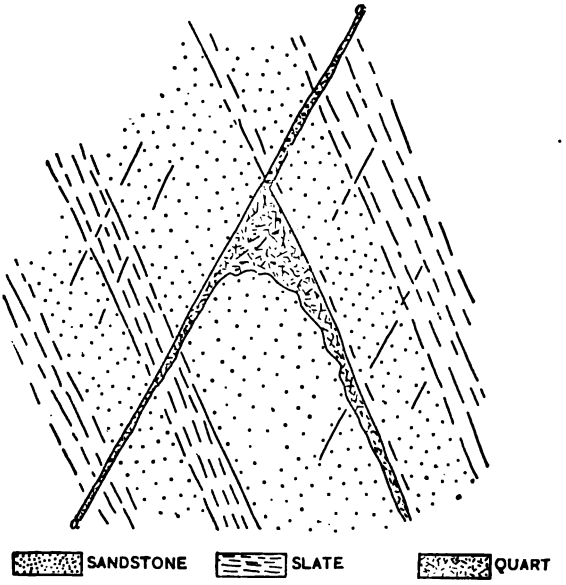


FIG. 43. — Ore formed at intersecting fractures; *a a* is fracture cutting across stratification.
From Spurr; Geology Applied to Mining after T. A. Rickard.

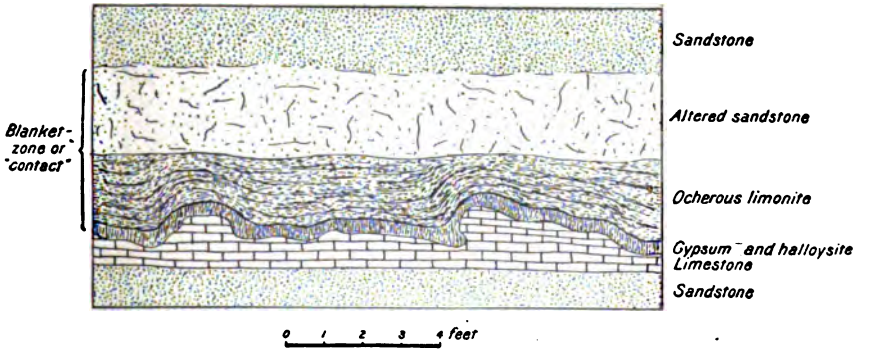


FIG. 44. — Example of "blanket" contact vein or zone; diagrammatic section through Logan mine, Rico Mts., Colo. (See p. 154.)
From pt. II, 22d Ann., U. S. G. S.

logic ages, those containing workable ore deposits, however, are not distributed equally throughout the time horizons. The large majority of economically important minerals, except iron ore and coal,

are found in the later geologic periods. For example, Lindgren gives the following values for the yield of gold in North America previous to 1890 from the deposits found in the different geologic periods[11]:

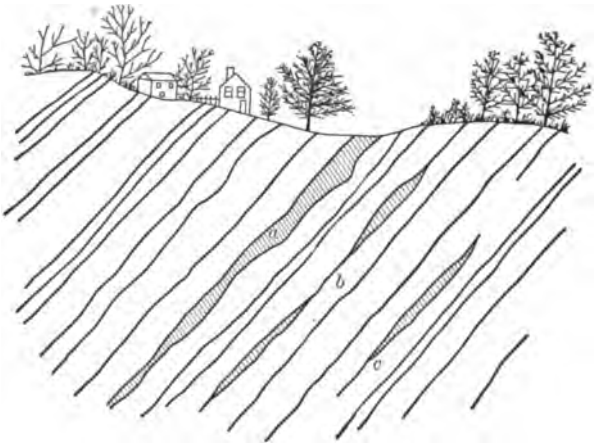


FIG. 45. — Bedded veins (non-horizontal); *a*, *b*, and *c*.
(See p. 153.)
From Phillip and Louis, Ore Deposits.

Pre-Cambrian deposits, in Georgia, Alabama, Tennessee, Maryland, Virginia, Black Hills, Wyoming, and Nova Scotia, yield $74,000,000

Cretaceous veins of Pacific coast, Southern California to Alaska, accompanied by great development of placers, yield.....$1,700,000,000

Late Cretaceous and Early Tertiary, Sonora, Mex., to Utah, and Colorado to Montana, usually as sulphides which contain more silver than gold $286,000,000

Tertiary (mostly Post-Miocene), usually in regions of intense igneous activity, Western Sierra Madre, Mex., and eastern slope of Sierra Nevada in United States and central Colorado, yield $724,000,000

[11] T. A, Rickard, in a paper read before the American Mining Congress at Denver, in 1906, gives the following interesting table of the geological distribution of gold as illustrated by the principal mining districts of the world:

Period	*Rock*	*District*	*Region*
Quarternary	Andesite	Monte Cristo	Washington
Tertiary	Eruptive	Cripple Creek	Colorado
Cretaceous	Sandstone	Verespatak	Transylvania
Jurassic	Amphibolite Schist	Mariposa	California
Triassic	Limestone	Raibi	Carinthia
Permian	Conglomerate	Stupna	Bohemia
Carboniferous	Shale	Gympie	Queensland
Devonian	Conglomerate	Witwatersrand	Transvaal
Silurian	Slate and Sandstone	Bendigo	Victoria
Cambrian	Slate and Quartzite	Waverley	Nova Scotia
Algonkian	Schist	Homestake	South Dakota
Archean	Granite and Schist	Lake of the Woods	Ontario

The reasons for these differences are not agreed upon. It has been suggested that the great erosion that has occurred since the earlier geologic periods may have removed the upper and richer parts of such ore deposits as may have been formed, so that only

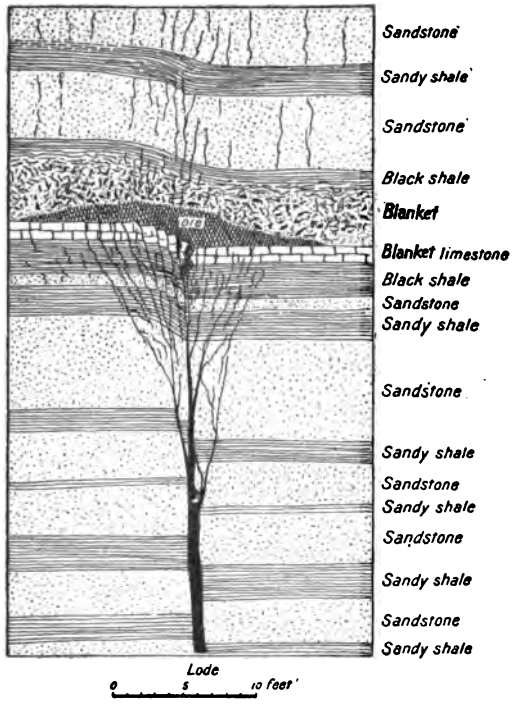


FIG. 46. — Diagrammatic section across northeasterly lode and its blanket pay shoot, Newman Hill, Colo., showing vein splitting up into many small stringers as it approaches "blanket." The vertical vein is the source of the ore in the "blanket" vein.
From pt. II, 22d Ann., U. S. G. S.

the comparatively lean roots of the veins are left. This explanation has been applied to the lean deposits of the Appalachians. A further suggestion is that the igneous eruptions of later periods have come from greater depths in the earth's crust where the rocks presumably contain larger proportions of the metals, so that the resulting vein formations would be richer in the metallic minerals.

The mineral contents of veins often vary according to the depth. In Cornwall the lodes that contain tin at the surface

become copper-bearing at great depths. In many lead regions, at a comparatively shallow depth the deposits change from galena (lead sulphide) to sphalerite (zinc sulphide).

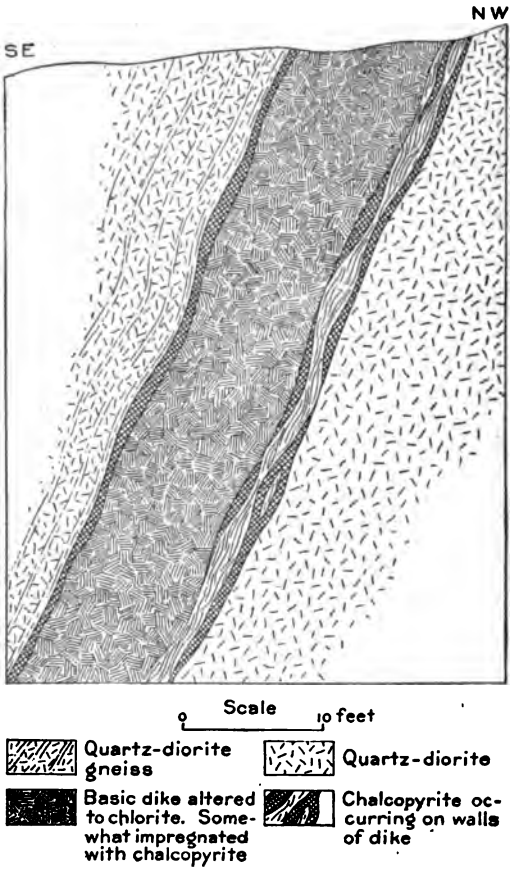


FIG. 47. — Ore-bearing dike with contact veins or deposits of chalcopyrite on walls; Itmay mine, Encampment district, Wyoming. (See p. 154.)
From professional paper No. 25. U. S. G. S.

It is stated that the reason that quicksilver deposits are always found in rocks of recent geologic age is that quicksilver minerals are only precipitated near the surface of a forming deposit. In the ore deposits formed in the older geologic horizons, the upper

FIG. 48. — Replacement of limestone by copper ore; Highland Bay mine, Utah. The light-colored, banded rock is the limestone; the dark places are the copper ore. (See p. 154.)
From professional paper No. 38, U. S. G. S.

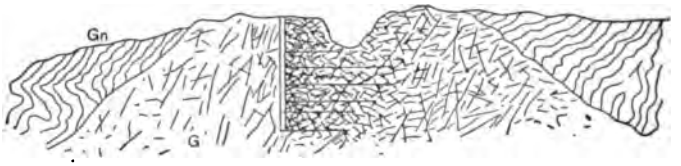


FIG. 49. — Example of stockwork; Gn, gneiss; G, granite. (See p. 154.)
From Geikie, Structural and Field Geology.

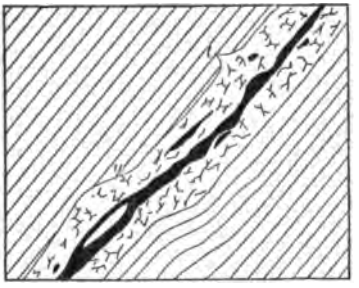


FIG. 50. — Example of bedded or stratum vein showing a small side stringer at *t*.
From Beck; Nature of Ore Deposits.

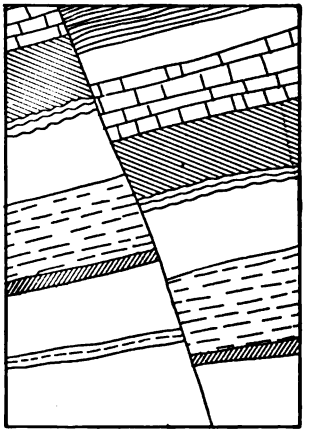


FIG. 51. — Section of simple normal fault. (See p. 141.)
From Beck; Nature of Ore Deposits.

portions have been removed by erosion and, hence, any quicksilver deposits destroyed.

The mineral contents of a vein may also (but not nearly always) vary according to the character of the different country rock through which it passes. The minerals may be different on the different wall rock or there may be payable mineral on one kind of country rock and the vein may be barren in another. Such differences are usually due to the chemical influence of the various kinds of country rock. This feature is of importance in connection with the continuity of a vein, necessary to secure certain legal rights, discussed in another chapter.

It is believed that the above list contains the names of all the varieties of veins to which such term is properly applicable. The word "vein" is also often improperly used in other geological connections, which will be mentioned below; but we may pause here and see if it is possible to frame a general definition that will

include all justifiable uses of the word. We submit the following as being as definite as is allowable and as including at the same time all of the legitimate varieties of veins: *A body of mineral different from the containing walls more or less sheet-like in form and contained within the rock-mass of the earth's crust.* Unless there is something of an approximation to a sheet or tabular form so that a section will show an elongated surface, the name "vein" does not seem justifiable; but if the mineral body has something approximating the form of an extended sheet the name will be proper no matter how irregular its surfaces may be, or whether it has definite walls or not. However, both walls must be solid rock; for if a formation, even though in other respects answering the description of a vein, has on one side of it only loose débris or "slide," it is not properly called a vein.

Improper Uses of the Term Vein

The varieties defined above comprise all the instances in which the term "vein," even when used with a qualifying adjective, has anything like a definite or well-recognized meaning as applied to geologic objects. However, the word is frequently applied loosely and improperly. These uses, which are often very confusing, deserve attention because they frequently become matters of controversy and mystification in litigation. Consequently, it is justifiable to devote some space to the explanation of such improperly used terms, although from a scientific standpoint they richly deserve to be cast into the "outer darkness." Such a term is *pipe vein.* This appears to have crept into mining literature by a mistake of Von Cotta. In his treatise on ore deposits,[12] speaking of the lead deposits of Derbyshire, he copies a diagram which is given by De La Bêche [13] in his original description of said deposits. This diagram is reproduced in Fig. 52, and, as will be observed on examination thereof, the irregular ore-bodies which occur at certain points in the deposit are called by De la Bêche "pipes"; but Von Cotta in his work calls them "pipe veins," defining these as "masses or sheets of ore, generally parallel to the stratification, but quite irregular." However, as the diagram copied from De la Bêche plainly shows, this writer did not use the term "pipe vein" at all. The object to which it

[12] Von Cotta's "Ore Deposits," Prime's translation, p. 431 (Fig. 52, p. 164).
[13] De la Bêche, "Geological Observer," (Am. Ed., 1851), p. 664.

is applied by Von Cotta and those writers who have blindly followed him has no resemblance whatever to a vein, and should not be so called. The definition of a pipe vein came up prominently in the expert evidence in the famous Eureka case, discussed hereafter. Dr. Raymond, who was a geological expert in this case, wrote, after it was over, a special article on the term [14] in which he states that so far as the word has any definite meaning, it is only as applied to an ore-body of an elongated shape; but this use is entirely different from the original use of the word as defined by Von Cotta. There are other words which will much better describe elongated ore-bodies; and Dr. Raymond's suggestion that the word be dropped from scientific literature is a good one. Another scientific writer has this to say: "'Pipe vein' has

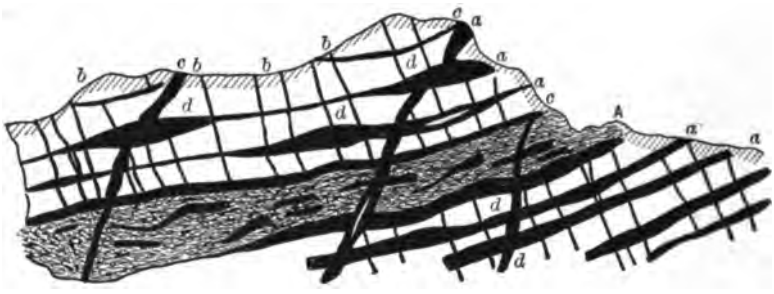


FIG. 52. — Von Cotta's diagram of "pipe veins." The enlargements at *d d d* are called by De La Bêche "pipes." (See p. 163.)

sometimes been used to express structure of this kind [similar to that shown in the diagram from De la Bêche] but the term has been employed in such various senses as to be objectionable." [15] Becker suggests "chambered vein" for such a deposit, but this hardly seems necessary.

"Rake vein" is another term which has been so much abused that it has no definite signification whatever and should also be cast out of scientific company. Geikie makes it synonymous with gash vein.[16] Phillips uses it to denote the direction of the strike of a vein with reference to the cardinal points: "*rake veins* . . . all those coursing approximately east and west but varying in

[14] A. I. M. E., 6-397.

[15] Becker, *op. cit.*

[16] Geikie, "Text Book of Geology" (1903), p. 891. He uses it in the following sentence: "The 'gash' or 'rake' veins of galena in the north of England . . ."

direction between north, 60 deg. east, and south, 60 deg. east." [17] Von Cotta says rake veins are "the lodes proper filling distinct fissures . . . Their course is irregular; their dip, as a rule, vertical." This "rake" vein is nothing more nor less than a typical fissure vein. These quotations show conclusively that the word has no definite meaning, and hence its scientific use is unjustifiable.

The term *mullock vein* is used in Australia as a name for an eruptive dike which, having become decomposed, the gold and silver together with quartz, originally disseminated through the dike, have been deposited in joints and fissures of the dike rock [18] This term, to say the least, appears to be unnecessary.

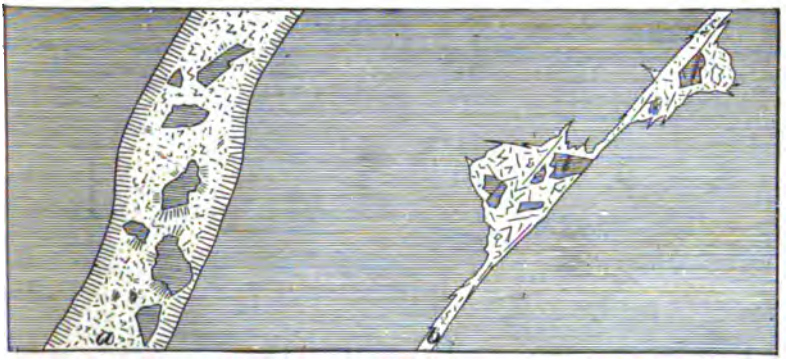


FIG. 53. — Example (*b*) of "chambered" vein. (See p. 164.)
From Monograph No. 13, U. S. G. S.

A fissure filled from above by sedimentary matter is sometimes called a *sediment vein;* but such a thing is of very rare occurrence in nature, and when it does appear is of no economic importance, so that a special name is scarcely needed. But if a name must be had, "sedimentary dike" would be a much better one.

The name *cross vein* has been applied to a vein which crosses the bedding planes of the strata at an angle (Fig. 54, p. 166), but such use is unnecessary and, in addition, conflicts with the same name applied to cases where two veins cross each other. (See p. 230.)

A stratum of coal or iron ore is sometimes called a vein, but such a use is wholly inaccurate. Coal deposits have been formed as members of the sedimentary series and are properly termed

[17] Phillips & Louis, "Ore Deposits" (1896), p. 271.
[18] Phillips & Louis, *op. cit.*, p. 125.

"seams," "beds," or "strata." The same is true of many iron deposits which are sedimentary deposits, such as the Clinton iron deposits of New York. These are members of sedimentary series, although in this case chemical agencies have played an important part in the formation of the deposits. However, deposits of the coal-like mineral albertite, which, as well as gilsonite and grahamite and some other bituminous substances, are found in fissures, are correctly called veins (Fig. 55, p. 166).

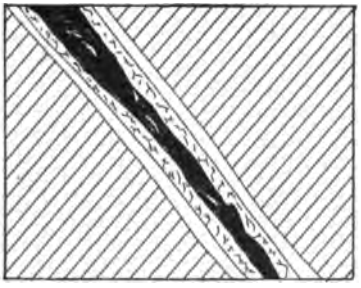


FIG. 54. — Example of "cross" vein; or vein which *crosses* the strata. (See p. 165.)
From Beck; Nature of Ore Deposits.

FIG. 55. — Example of bituminous (asphalt) vein, Cuba.
From Merrill; Non-Metallic Minerals after R. C. Taylor.

The term "lode" (or "lead") which is used in the statute as synonymous with vein is not exactly so in the scientific sense. In one direction it is a narrower term, as it is only properly applied to deposits containing metallic minerals; but in another direction it is wider, for it may include some ore-bodies which would not be called veins as defined above. The word "ledge," also used in the statute as a synonym of vein, strictly means a vein which projects or outcrops markedly above the surface; but in its common use it is interchangeable with the word "vein."

XI

Legal definition of a vein or lode; the Eureka case; other cases defining "vein" under statute; amount of mineral necessary to make a legal vein; the Grand Central Mammoth case; what is NOT *a legal vein.*

Legal Definition of a Vein or Lode

WE come now to the legal interpretation of the words "vein or lode" as used in the sections of the statute already quoted. If ideal conditions always existed, if mineral deposits invariably occurred in veins according to the scientific definition, and these were traceable on the surface so that the boundaries of mining claims could be correctly located in relation thereto; and, if these veins were sheets of mineral matter descending into the depths between well-defined walls, there would be few occasions for disputes and litigation. But, as the discussion and classification given above show, mineral deposits, even after excluding those which come under the provisions of the placer or other special sections of the law, occur in many different forms. Furthermore, the preceding outline of mining and geologic usage makes it clear that there is and has been much indefiniteness connected with the employment of the current descriptive terms. Consequently, litigation early arose; and one of the first disputed questions was what constitutes "a vein or lode of quartz or other rock in place" within the meaning of the statute, necessary to give statutory rights? This is a question of fundamental importance. It has been passed upon by the courts many times; but, as each decision was with reference to the facts of the particular litigation at bar, no single case contains a comprehensive definition of the terms. It seems that the best way in which to set forth the legal conception of a vein or lode, as defined and interpreted by the courts, will be to give the discussions and defi-

nitions relating thereto in the leading cases on this branch of the subject.[1]

An examination of the cases in question shows that there are somewhat different views held by the courts as to the meaning of the words "vein or lode," according to the circumstances surrounding the locations and the parties between whom the contest arises. In *Migeon* vs. *Montana Central Ry. Co.*, 77 Fed., 249 (254), the court recognized this fact and gives a classification of the cases as follows:

"There are four classes of cases where the courts have been called upon to determine what constitutes a lode or vein within the intent and meaning of different sections of the Revised Statutes;

"(1) Between miners who have located claims on the same lode under the provisions of section twenty-three hundred and twenty.

"(2) Between placer and lode claimants, under the provisions of section twenty-three hundred and thirty-three.

"(3) Between mineral claimants and parties holding town-site patents to the same ground.

"(4) Between mineral and agricultural claimants of the same land. Lindley [2] suggests another class:

"(5) Controversies between a lode miner, who has penetrated into and underneath lands adjoining in the development of what he has located under the law applicable to lode claims, and the adjoining or neighboring surface proprietor, whose claim to the underlying mineral deposits rests solely upon presumptions flowing from surface ownership." [3]

[1] In the chapters concerning the legal definition of veins, apex, etc., and the applications of the extralateral rules, the writer believes that the best way to give the reader a real understanding of the import and exact application of the principles of the law, as made by the courts to the actual conditions of mining, is by presenting a series of carefully selected extracts from the leading cases which discuss the numerous phases of the application of the general principles of the law, rather than to attempt to state in his own language the conclusions of the courts. A decision of the higher courts is the law itself, concerning the particular subdivision or the particular facts and conditions involved, so that the part of the decision itself concerning the specific point is better than an abstract of the same by another person. The reader is thus enabled to judge better what the law is, with relation to the conditions of his own case, than he could from a general statement of a proposition of law without any discussion or description of the conditions and circumstances upon which the application of the rule of law was made. It is, of course, practically impossible for any one but a lawyer with a well-filled library to have all of the reports of the United States courts and the higher courts of all the mining States throughout which the mining decisions are scattered. Consequently, it seems that the best way to give any one, not a lawyer, an adequate idea of these branches of our subject is by presentation of the essential parts from the decisions of the most important cases. This is accompanied by such diagrams, explanations, etc., and general discussion as would seem necessary to an understanding of the principle of law under consideration.

At the end of the discussion on each situation, a concise statement of the law applicable thereto is attempted in the form of a brief rule. The collection of mining cases in Morrison's "Mining Reports" is very valuable to any one who wishes to investigate more fully the law, as found in the decisions, on mining subjects.

[2] Lindley on Mines, sec. 291

[3] *Iron S. M. Co.* vs. *Campbell*, 135 U. S., 286.

The greater part of the litigation has arisen under the first subdivision, — contests between miners located on same lode; and we will consider the judicial definitions of the statutory terms in this class first.

Controversy between Mining Claimants on the Same Lode

In this class of cases the interpretation placed upon the term "vein" or "lode" is the most liberal of any, and it only requires a very small amount of evidence of the existence of mineral, and this need not exist in paying quantities, to cause the courts to hold that such deposit gives the legal rights of a vein or lode to the claimant.

The first case to pass upon this feature of the law of 1872 is commonly referred to as the Eureka case.[4] The opinion in this case was written by Justice Field of the United States Supreme Court, the case having been tried before him while holding United States Circuit Court. The fundamental and immense practical importance of the subject and the able treatment of it in this case justifies an extensive citation from the opinion. It has settled the general interpretation of this feature of the law of 1872 and has been approved by the United States Supreme Court in *Iron Silver, etc., Co.* vs. *Cheesman*, 116 U. S., 529.

The geological features of the district in which the properties were located have been the subject of two monographs of the United States Geological Survey.[5] According to Curtis:

"The main beds of Ruby Hill are an underlying mass of quartzite, a broad zone of mineralized limestone and an overlying belt of shale, all of which have been tilted so that they stand at an angle of about 40 degrees; this angle being somewhat greater in the upper than in the lower workings of the mine." (See Fig. 56, p. 170.)

The situation of the vein, wall, rock, etc., as it appeared to the court from the expert and other evidence in the case, is stated as follows in the opinion:[5a]

"The mining ground which forms the subject of controversy is situated in a hill known as 'Ruby Hill,' a spur of Prospect Mountain, distant about two miles from the town of Eureka, in Nevada. Prospect Mountain is several

[4] *Eureka, etc., Co.* vs. *Richmond, etc. Co.*, 4 Sawyer, 302. See p. 241 for map.

[5] Monograph VII, J. S. Curtis, "Silver-Lead Deposits of Eureka, Nevada"; Monog. XX, Arnold Hague, "Geology of the Eureka, Nevada District."

[5a] *Eureka, etc., Co.* vs. *Richmond, etc., Co.*, 4 Sawyer, 302, Fed. Cas., 4548, 9 Morr M. R., 578.

miles in length, running in a northerly and southerly course. Adjoining its northerly end is this spur called 'Ruby Hill,' which extends thence westerly, or in a southwesterly direction. Along and through this hill, for a distance slightly exceeding a mile, is a zone of limestone, in which, at different places throughout its length, and in various forms, mineral is found, this mineral appearing sometimes in a series or succession of ore-bodies more or less closely connected, sometimes in apparently isolated chambers, and at other times in what would seem to be scattered grains. And our principal inquiry is to ascertain the character of this zone, in order to determine whether it is to be treated as constituting one lode, or as embracing several lodes, as that term is used in the Acts of Congress of 1866 and 1872, under which the parties have acquired whatever rights they possess. In this inquiry, the first thing to be settled is the meaning of the term in those acts. This meaning being settled, the physical characteristics and the distinguishing features of the zone will be considered.

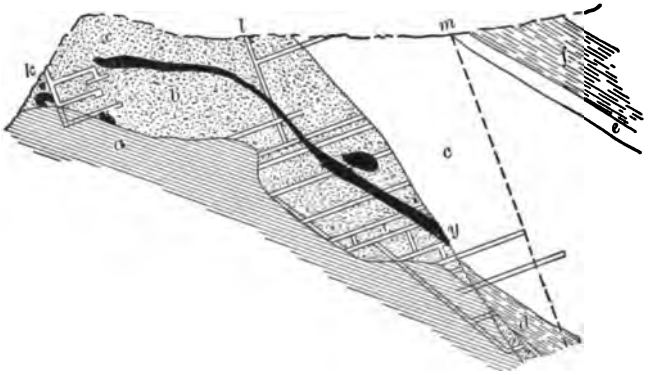


FIG. 56. — Section at Eureka, Nevada; *a*, underlying quartzite; *b*, crushed mineralized limestone; *x y* east ore-body.
From Genesis of Ore Deposits; *Pošepný et al.* After J. S. Curtis.

"Those acts give no definition of the term. They use it always in connection with the term 'vein.' The Act of 1866 provided for the acquisition of a patent by any person or association of persons claiming 'a vein or lode of quartz, or other rock in place, bearing gold, silver, cinnabar, or copper.' The Act of 1872 speaks of veins or lodes of quartz or other rock in place, bearing similar metals or ores. Any definition of the term should, therefore, be sufficiently broad to embrace deposits of the several metals or ores here mentioned. In the construction of statutes, general terms must receive that interpretation which will include all the instances enumerated as comprehended by them. The definition of a 'lode' given by geologists is, that of a fissure in the earth's crust filled with mineral matter, or more accurately, as aggregations of mineral matter containing ores in fissures. (See Von Cotta's "Treatise on Ore Deposits," Prime's translation, 26.) But miners used the term before geologists attempted to give it a definition. One of the witnesses in this case, Dr. Raymond, who for many years was in the

service of the general government as Commissioner of Mining Statistics, and in that capacity had occasion to examine and report upon a large number of mines in the States of Nevada and California, and the Territories of Utah and Colorado, says that he has been accustomed, as a mining engineer, to attach very little importance to those cases of classification of deposits which simply involve the referring of the subject back to verbal definitions in the books. The whole subject of the classification of mineral deposits he states to be one in which the interests of the miner have entirely overridden the reasonings of the chemists and geologists. 'The miners,' to use his language, 'made the definition first. As used by miners, before being defined by any authority, the term lode simply meant that formation by which the miner could be led or guided. It is an alteration of the verb lead; and whatever the miner could follow, expecting to find ore, was his lode. Some formation within which he could find ore, and out of which he could not expect to find ore, was his lode.' The term 'lode-star,' 'guiding-star,' or 'north star,' he adds, is of the same origin. Cinnabar is not found in any fissure of the earth's crust, or in any lode, as defined by geologists, yet the Acts of Congress speak, as already seen, of lodes of quartz, or rock in place, bearing cinnabar. Any definition of 'lode,' as there used, which did not embrace deposits of cinnabar would be as defective as if it did not embrace deposits of gold or silver. The definition must apply to deposits of all the metals named, if it apply to a deposit of any one of them. Those acts were not drawn by geologists or for geologists; they were not framed in the interest of science, and consequently with scientific accuracy in the use of terms. They were framed for the protection of miners in the claims which they had located and developed, and should receive such a construction as will carry out this purpose. The use of the terms 'vein' and 'lode' in connection with each other in the Act of 1866, and their use in connection with the term 'ledge' in the Act of 1872, would seem to indicate that it was the object of the legislator to avoid any limitation in the application of the acts, which a scientific definition of any one of these terms might impose.

"It is difficult to give any definition of the term, as understood and used in the Acts of Congress, which will not be subject to criticism. A fissure in the earth's crust, an opening in its rocks and strata made by some force of nature, in which the mineral is deposited, would seem to be essential to the definition of a lode, in the judgment of geologists. But to the practical miner, the fissure and its walls are only of importance as indicating the boundaries within which he may look for and reasonably expect to find the ore he seeks. A continuous body of mineralized rock, lying within any other well-defined boundaries on the earth's surface and under it, would equally constitute, in his eyes, a lode. We are of opinion, therefore, that the term as used in the Acts of Congress is applicable to any zone or belt of mineralized rock lying within boundaries clearly separating it from the neighboring rock.[6] It includes, to use the language cited by counsel, all deposits of mineral matter found through a mineralized zone or belt coming from the same

[6] T. A. Rickard (editorial in *Mining and Scientific Press*, May 24, 1906) quotes this definition and says concerning it: "Such a definition includes everything from Dan to Beersheba, and affords glorious opportunity for claiming your neighbor's ore reserves."

source, impressed with the same forms, and appearing to have been created by the same processes.

"Examining now, with this definition in mind, the features of the zone which separate and distinguish it from the surrounding country, we experience little difficulty in determining its character. We find that it is contained within clearly defined limits, and that it bears unmistakable marks of originating, in all its parts, under the influence of the same creative forces. It is bounded on the south side for its whole length, at least so far as explorations have been made, by a wall of quartzite of several hundred feet in thickness; and on its north side, for a like extent, by a belt of clay, or shale, ranging in thickness from less than an inch to seventy or eighty feet. At the east end of the zone, in the Jackson mine, the quartzite and shale approach so closely as to be separated by a bare seam, less than an inch in width. From that point they diverge, until, on the surface in the Eureka mine, they are about five hundred feet apart, and on the surface in the Richmond mine, about eight hundred feet. The quartzite has a general dip to the north, at an angle of about forty-five degrees, subject to some local variations, as the course changes. The clay or shale is more perpendicular, having a dip at an angle of about eighty degrees. At some depth under the surface, these two boundaries of the limestone, descending at their respective angles, may come together. In some of the levels worked, they are now only from two to three hundred feet apart.

"The limestone found between these two limits — the wall of quartzite and the seam of clay or shale — has, at some period of the world's history, been subjected to some dynamic force of nature, by which it has been broken up, crushed, disintegrated, and fissured in all directions, so as to destroy, except in places of a few feet each, so far as explorations show, all traces of stratification; thus specially fitting it, according to the testimony of the men of science, to whom we have listened, for the reception of the mineral, which, in ages past, came up from the depths below in solution, and was deposited in it. Evidence that the whole mass of limestone has been, at some period, lifted up and moved along the quartzite, is found in the marks of attrition engraved on the rock. This broken, crushed and fissured condition pervades, to a greater or less extent, the whole body, showing that the same forces which operated upon a part, operated upon the whole, and at the same time. Wherever the quartzite is exposed, the marks of attrition appear. Below the quartzite no one has penetrated. Above the shale the rock has not been thus broken and crushed. Stratification exists there. If in some isolated places there is found evidence of disturbance, that disturbance has not been sufficient to affect the stratification. The broken, crushed, and fissured condition of the limestone gives it a specific, individual character, by which it can be identified and separated from all other limestone in the vicinity.

"In this zone of limestone numerous caves or chambers are found, further distinguishing it from the neighboring rock. The limestone being broken and crushed up as stated, the water from above readily penetrated into it, and, operating as a solvent, formed these caves and chambers. No similar cavities are found in the rock beyond the shale, its hard and unbroken

character not permitting, or at least opposing, such action from the water above.

"Oxide of iron is also found in numerous places throughout the zone, giving to the miner assurance that the metal he seeks is in its vicinity.

"This broken, crushed, and fissured condition of the limestone, the presence of the oxides of iron, the caves or chambers we have mentioned, with the wall of quartzite and seam of clay bounding it, give to the zone, in the eyes of the practical miner, an individuality, a oneness as complete as that which the most perfect lode in a geological sense ever possessed. Each of the characteristics named, though produced at a different period from the others, was undoubtedly caused by the same forces operating at the same time upon the whole body of the limestone.

"Throughout this zone of limestone, as we have already stated, mineral is found in the numerous fissures of the rock. According to the opinions of all the scientific men who have been examined, this mineral was brought up in solution from the depths of the earth below, and would therefore naturally be very irregularly deposited in the fissures of the crushed matter, as these fissures are in every variety of form and size, and would also find its way in minute particles in the loose material of the rock. The evidence, shows that it is sufficiently diffused to justify giving to the limestone the general designation of mineralized matter — metal-bearing rock. . . .

"Our judgment being that the limestone zone in Ruby Hill, in Eureka District, lying between the quartzite and the shale, constitutes within the meaning of the Acts of Congress one lode of rock-bearing metal, we proceed to consider, etc."

The same case was before the United States Supreme Court in *Richmond Min. Co.* vs. *Eureka Min. Co.*, 103 U. S., 839, but the definition of a vein as given in Judge Field's opinion in the Eureka case was not passed upon.

In the case, however, of the *Iron Silver Min. Co.* vs. *Cheesman*, 116 U. S., 529, this question came squarely before the court for the first time; and the court says:

"What constitutes a lode or vein of mineral matter has been no easy thing to define. In this court no clear definition has been given. On the circuit it has often been attempted. Mr. Justice Field, in the Eureka Case, shows that the word is not always used in the same sense by scientific works on geology and mineralogy, and by those engaged in the actual working of mines."

After citing a portion of Justice Field's decision, which we have given above, the court continues:

"This definition has received repeated commendation in other cases, especially in *Stevens* vs. *Williams*, 1 McCrary, 480, 488, where a shorter definition by Judge Hallett, of the Colorado Circuit Court, is also approved, to

wit: 'In general, it may be said that a lode or vein is a body of mineral, or mineral body of rock, within defined boundaries, in the general mass of the mountain.' . . . Now, a vein containing the precious metals is by no means always a straight line of uniform dip, or thickness, or richness, of mineral matter throughout its course. Generally, the veins are found in what, when the mineral is taken out of them, constitute clefts or fissures in the surrounding rock, with a well-defined wall above and below of different kinds of rock, as porphyry on one side, above or below, and limestone on the other.

"So long as these enclosing walls can be distinctly and continuously traced, and the mineral matter of the same character found between them, there can be no doubt that it is the same vein. But sometimes the cleft between the enclosing rocks, called in mining parlance the country rock, diminishes so as to be scarcely perceptible. Sometimes for a short distance the fissures disappear entirely and again is found distinctly to exist a little further on. Again, it is seen that, though the underlying and superposing country rock is there, the mineral disposit ceases to be found, but, following the fissure it reappears again very soon.

"It also happens that both fissure and mineral come to an end and are found no more in that direction, or, if found so far off or so deflected from the original line as to constitute no part of that vein."

The court then proceeds to approve and quote from the charge to the jury of the trial judge as follows:

"To determine whether a lode or vein exists, it is necessary to define those terms; and, as to that, it is enough to say that a lode or vein is a body of mineral, or mineral-bearing rock, within defined boundaries in the general mass of the mountain. In this definition the elements are the body of mineral or mineral-bearing rock and the boundaries; with either of these things well established, very slight evidence may be accepted as to the existence of the other. A body of mineral or mineral-bearing rock in the general mass of the mountain, so far as it may continue unbroken and without interruption, may be regarded as a lode, whatever the boundaries may be. In the existence of such a body and to the extent of it, boundaries are implied. On the other hand, with well-defined boundaries, very slight evidence of ore within such boundaries will prove the existence of a lode. Such boundaries constitute a fissure, and if in such fissure ore is found, although at considerable intervals and in small quantities, it is called a lode or vein . . . if there is a continuous body of mineral or mineral-bearing rock extending from one claim to the other it must be that there are boundaries to such body and the lode exists. Or if there is a continuous cavity or opening between the similar rocks in which ore in some quantity and value is found, the lode exists. . . . Proof of either proposition goes far to establish a lode, and it may be said without proof of one of them a lode cannot exist. . . . All that has been said by witnesses about rock in place is valuable only as it tends to prove or disprove the existence of a crevice or opening extending from one claim to the other. Excluding the wash, slide, or débris on the surface of the mountain,

all things in the mass of the mountain are in place. A continuous body of mineral or mineral-bearing rock extending through loose and disjointed rocks is a lode as fully and certainly as that which is found in more regular formation; but if it is not continuous or is not found in a crevice or opening which is itself continuous it cannot be called by that name."

Another definition of a vein is given in *Doe* vs. *Waterloo Min. Co.*, 54 Fed., 935. In this case, which originated in San Bernardino County, Calif., the question was whether three parallel veins with some cross stringers should be held to be one mineralized zone or vein or three distinct veins. A number of noted mining engineers, John Hays Hammond, J. Ross Brown, Louis Janin, and T. Sterry Hunt, were expert witnesses in the case, and their testimony is liberally quoted and reviewed by the court in its decision. From this evidence it reaches the conclusion that the ore-bodies involved were separate veins, within the meaning of the statute, and not one vein or lode.

The same case was before a higher Federal court and reported in 82 Fed., 45. In this court it was held that where there were two veins or ore-bodies, lying near together in country rock of liparite, and each had clearly defined foot and hanging walls, with the usual characteristics of lodes or veins, that they were legally separate lodes or veins and could not be considered as constituting with the mass of liparite between them a single mineralized zone or lode, though the intervening liparite was more broken up than that lying outside, and to some extent impregnated with silver.

The character of the boundaries necessary are stated in the most liberal form in *Hyman* vs. *Wheeler*, 29 Fed., 353:

"In discussions at the bar, and in the opinions of witnesses, it was assumed that the character of a body of ore as coming within or falling without the act of Congress could be determined by classifying it as a segregated or contact fissure vein or as a bed or impregation of ore; and that it was a matter of importance to ascertain whether the ore was separated from the country rock by planes or strata of that rock visible to the eye. I see no reason for such distinctions. It is true that a lode must have boundaries, but there seems to be no reason for saying that they must be such as can be seen. There may be other means of determining their existence and continuance, as by assay and analysis; and certainly the form and mode of occurrence of valuable ore, however, controlling and influential in determining its geological character, is not a matter upon which it can be excluded from the terms of the act of Congress."

The same subject is considered in a late case in the United States Circuit Court for the district of Idaho,[7] in which the court says:

"no one has been able to set definite limits to the ledge, and that it has no distinct hanging-wall cannot be doubted. Its one distinct and persistent feature is its foot-wall. It was the axis of action. Upon it the superincumbent mass of hanging country had its oscillating and grinding motion, resulting in the creation of that heavy selvage or gouge now found upon it, and in so shaking and breaking up that hanging country as to change the relation of its component parts, thus creating large masses of brecciated rock, fissures, and cavities, through which the circulating mineral elements deposited their ores. It would be expected that those conditions would decrease as we advance from the line of fissure and action, until, reaching a point where there had been no disturbance of the rocks, we would expect the evidence of mineralization to extend far beyond the ore deposits, and as far as the country had been disturbed, displaced, or brecciated; but we cannot conclude that the legal hanging-wall extends to the limits of these influences. . . . To hold that the ledge extends to the extreme limits of all evidence of mineralization is not a reasonable or practicable proposition in such a formation as this. If not there, where, then? Not beyond the ore deposit line or where such strong indications of it are found that the miner would work or explore with the expectation of compensation."

The statute requires that the vein or lode be "in place." This phrase has been commented upon and defined in a number of cases.

In the case of *Tabor* vs. *Dexter*, Fed. Cas., 13,723, the court says:

"To maintain this position, it is necessary to show that the lode is in place, within the meaning of section 2320, Revised Statutes U. S. And this depends upon the position of the ore or vein matter in the earth, as whether the inclosing mass is fixed and immovable, more than upon the character of the ore itself. Whether the ore is loose and friable, or very hard, if the inclosing walls are country rock, it may be located as a vein or lode. But if the ore is on top of the ground, or has no other covering than the superficial deposit, which is called alluvium, diluvium, drift, or débris, it is not a lode or vein within the meaning of the act, which may be followed beyond the lines of the location."

In *Leadville Co.* vs. *Fitzgerald*, Fed. Cas., 8158 also:

"To comply with the statute the vein or lode must be 'in place.' It is not enough that the lode or vein lie on the top of fixed or immovable rock. There must be a hanging- as well as a foot-wall. It is not enough that the

[7] *Bunker Hill, etc., Co.* vs. *Empire State, etc., Co.*, 134 Fed., 268.

deposit be covered on the upper side by loose material and débris, although if the rock above the lode is in its original position, although somewhat broken and shattered by the movement of the country or other courses, it is in place. If the principal part of the rock above the mineral is in its original position according to the present structure of the mountain, the lode is in place, although some masses of rock or boulders are assorted with the ore."

In the case of *U. S. Min. Co.* vs. *Cheesman*, 116 U. S., 536, 6 Sup. Ct., 484, the Supreme Court approves the following:

"The language is 'quartz or other rock in place.' By the phrase, 'in place,' Congress evidently intended to make a distinction between rock or quartz held in place by the adjoining country rock and bunches or blotches of quartz or rock simply lying or resting upon the earth's surface without any walls, and also pieces or boulders detached from the earth's crust, commonly called 'float,' usually found in gulches and along streams. The quartz or rock designated as 'in place,' must be suspended between, or lie within, or be enclosed by walls of rock constituting the general mass of the earth's crust in the immediate vicinity of the zone or belt. This need not be uniform. The other necessary characteristic is that the belt or zone must bear some of the minerals of valuable deposits mentioned in this statute. A body of quartz, etc., might have walls, continuity, etc., but if totally barren of minerals, it would not be a lode. It is not necessary that the mineral be evenly distributed. It is sufficient if the zone or belt, as a whole, bears any valuable deposits mentioned in the statute. Wherever the two conditions I have mentioned are found together, — that is (1) quartz or rock held in place by the adjacent country rock, and (2) the presence therein of gold, silver, cinnabar, lead, tin, copper or other valuable deposits, — there is a lode."

It is not necessary that the amount of mineral found in a vein should be in sufficient quantity to make the ore profitable to work. This is fully discussed and the reasons therefor well stated in *Book* vs. *Justice, etc., Co.*, 58 Fed., 106 (124), where the court says:

"It must be remembered that this is not a controversy between miners, upon one side, and agricultural claimants, on the other, to determine whether the land on Justice hill is more valuable for one purpose than the other; but it is a controversy between miners, to determine which has the title to certain lands claimed by both parties as mineral land, and to have the title thereto quieted by a decree of this court. . . . If this theory were adopted by the courts, it would invalidate many mining locations. Logically carried out, it would prohibit a miner from making any valid location until he had fully demonstrated that the vein or lode of quartz or other rock in place, bearing gold and silver, which he had discovered, would pay all the expenses of removing, extracting, crushing, and reducing the ore, and leave a profit to the owner. If this view should be sustained, it is manifest that it would lead to absurd, injurious, and unjust results, destructive of the rights of prospectors

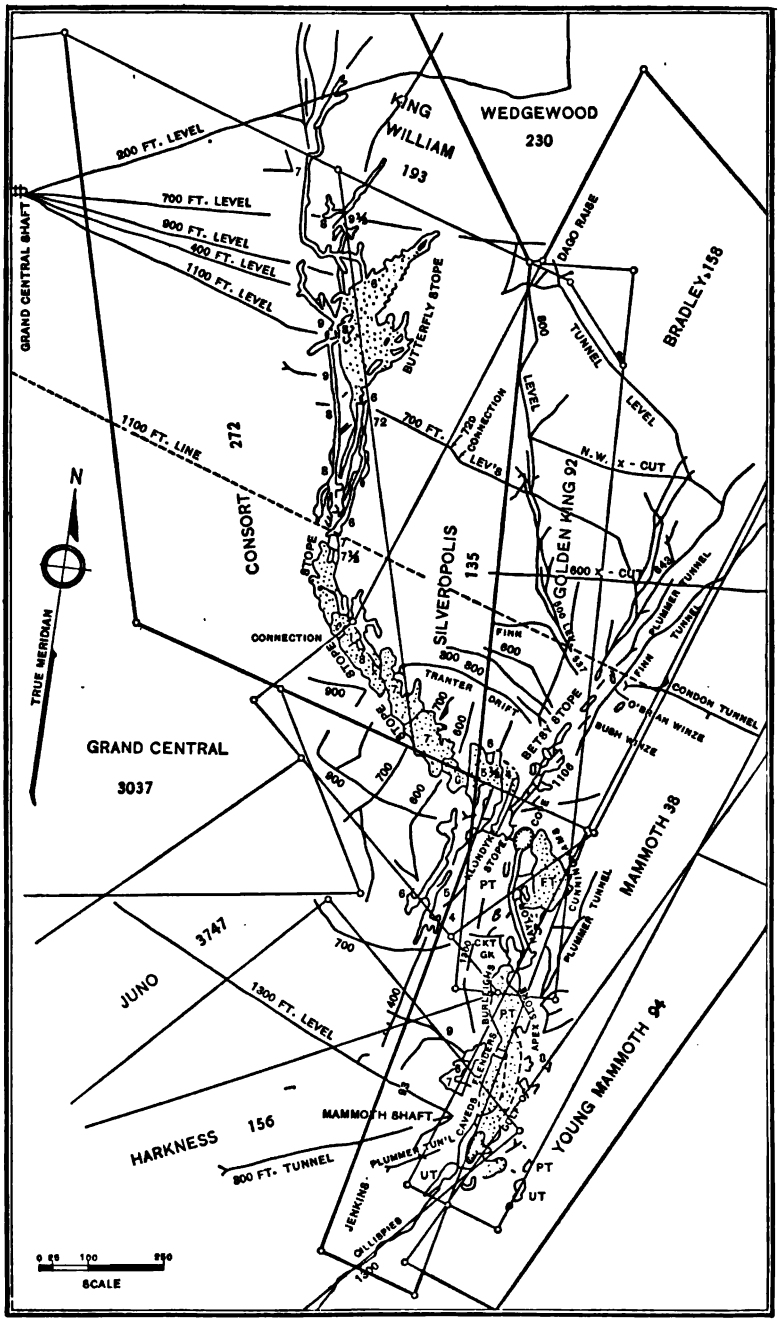


FIG. 57. — Plat of the claims and workings in *Grand Central M. Co.* vs. *Mammoth M. Co.*, from the decision.

and miners in their honest, patient, and industrious efforts to explore, discover, and develop the veins and lodes that exist in the public mineral lands of the United States. A vein or lode of quartz or other rock in place, bearing gold and silver, is found upon the side of a hill or mountain. It is within well-defined walls, and the rock assays from $1 to $15 per ton. The cost of extracting, removing, and milling the ore is $20 per ton. The miner making the discovery is aware of this fact, but he knows, or has good reason to believe from his own knowledge, gained by years of experience, that, within or along the veins or lodes of that particular district, places are liable to be found that may prove to be of much greater value, and that the ore is liable to be richer at a greater depth than it is upon the surface. Now, in such a case, can it be reasonably claimed, under the provisions of the mining laws, that the person making the discovery — a discovery which, in good faith, induces him to locate the vein or lode, and to commence the running of a tunnel into the hill or mountain for the purpose of properly working and developing the ground, and complying with all of the provisions of the law, after he has expended thousands of dollars in labor and improvements upon the same — can be deprived of his location by the fact that other persons, subsequent to his discovery and to his location, went upon the hill 500 or 1000 feet distant from the place where he had found and prospected the lode, but within the limits of his location, and there, by sinking a deeper shaft upon the same lode found ore which assayed over $40 per ton, — enough to insure a profit to the owners, — and thereupon located the ground? This may be an extreme case but it fairly illustrates the theory."

The most important mining decision of recent years is that in the Grand Central-Mammoth litigation, delivered by the Supreme Court of Utah, October 11, 1905.[8] The chief question in the controversy was the definition of a vein with reference to apex, extralateral rights, etc., and the decision contains one of the best discussions, based on the latest investigations and theories of vein formation and ore deposits, that has ever been presented on this feature of the mining statutes by a court. The action in the lower court was to recover the value of ore (over $300,000) mined by the Mammoth owners from beneath the Grand Central Company's territory that owned the Silveropolis and Consort claims. The defense was that they were only taking ore from the dip of a vein apexing in their own claim, as they had a right to do. The claims and the alleged veins are shown in Fig. 57. There was no dispute that the Mammoth had the apex of the vein for a distance of 790 ft. to what is known as the Cunningham stope. Here, as shown on the diagram, the stopes left the subsurface of the Mammoth and followed the vein to

[8] *Grand Central M. Co.* vs. *Mammoth M. Co.*, 83 Pac., 648.

the west until they eventually came underneath the Grand Central.

The Grand Central owners claimed that the Mammoth had no apex beyond the 790-ft. plane, that the apex of the vein passed out of the side line of the Mammoth at that point, and that a vertical plane at that point, parallel to the end line, passed south of and did not include the ore-bodies in dispute. On the other hand, the Mammoth owners claimed that beyond the 790-ft. point they had a mineralized belt or zone which was the apex of the vein in the legal sense, although it did not carry enough values to be workable, and therefore they had extralateral rights on the vein between the vertical planes of their end lines which would give them the ore-bodies in dispute. The trial lasted seventy days, and a number of prominent mining engineers and geologists were witnesses. It appears from the correct understanding and use of geology and geologic terms in the decision that the court gained during the trial a good working knowledge of the most approved theories of ore-deposits and mining geology, if it did not previously possess such information.

The court says:

"Respecting the geological features of the country in which the properties are located, there is practically no conflict. It is shown that the mines are found in a lime belt which covers about two square miles, and is the great producing area of the Tintic district. In some places the limestone beds are upturned, large areas tilted upon edge, the beds dipping nearly vertically down; while in other places they dip at lower angles, and in special areas the dips are quite uniform; and again, though, it seems, not frequently, anticlinals exist. This limestone is surrounded on all sides, except the north, by igneous rocks. The sedimentary rocks are broken up and fractured, evidently the result of igneous intrusion. The limestone carries some iron, the different forms of iron oxide, also some manganese, and, in places, the limestone is crushed, crumbled, and brecciated. How these beds of organic sediment were dislocated, bent, and upturned is not free from doubt. . . . Whatever the cause, the disturbance is apparent from the evidence. The surface of the limestone area, wherever exposed, is marked with innumerable seams, cracks, and small fissures filled with carbonate of lime, stained more or less with iron and sometimes manganese. Quartz, spar, and other materials, characteristic, in general, of mineral-bearing limestone areas, are present, and, in places, the surface material is brecciated and recemented. A trace of mineral, of one or more of the precious metals, and, in places, more than a trace, even where there is no known vein, seems also to be a characteristic of that lime belt. The witnesses for the appellant, who had examined the surface and open-cuts as well as the underground

workings of the mines, testified, in general, that the fractured, stained, and brecciated conditions appeared to such an extent upon the surface and in the open cuts of Lot 38, as to furnish unmistakable evidence of the apex of a vein; that the vein was so clearly defined upon the surface, and so distinctly differentiated from the adjacent country, that its boundaries could readily be traced throughout the length of that lot, and be recognized by mere observation; and that the indications showed the apex to be so wide that it overlapped the side-lines of that claim." . . .

The court then reviews the testimony of a number of witnesses for the defense. Next it observes that the witnesses for the plaintiff

"say, with at least equal emphasis, that no such differentiation exists; that there are no indications of a vein or apex on Lot 38, north of the point where the Cunningham stope crosses its west side-line, which is about 90 ft. south of the Silveropolis south end-line extended; that apart, from the dike material, the limestone, north of that point, within Lot 38, is not any more broken and brecciated than in the adjoining country to the east and west; that neither the calcite, the calcspar, the iron seams, the iron stains nor the fracturing or fissuring is any more abundant within the limits of that lot north of that point, than for a long distance to the eastward and westward; that wherever, in that belt, the surface of the rock is exposed, by erosion or otherwise, there appear innumerable seams, cracks, small fractures, or fissures, running in every conceivable direction, filled with calcite, stained more or less with iron, in instances containing some manganese; and that in many places the surface material is brecciated and re-cemented. . . .

"In determining whether the finding of the court was warranted by the evidence, it is important to consider what constitutes a vein or lode. It will hardly be contended that, merely because rock is broken, crushed, shattered, and even fissured, it constitutes a vein within the meaning of the laws of Congress. All miners of any experience, as well as men of scientific research, know that such occurrences may be found in the most barren country. Something more is necessary to dignify that kind of material with the character of a vein or lode. The material, whatever else may be its condition, must be metalliferous — must contain some kind of mineral of value, so as to distinguish it from the country rock; and especially is this true where there are no well-defined walls. . . .

"Fissure veins have many characteristics. They are the fillings of fissures or openings of the country rock; they contain different kinds of material, in some respects corresponding with, in others differing from, the country rock; the most common material being quartz. The fissures have selvages and slickensides, and the gangue material is generally easily distinguished from the country rock. . . .

"Fissure veins are simple or banded according to structure as to minerals. Some continue in the same direction; others are irregular and change their courses. Some have a continuity of ore, while others are barren in places, and still others are faulted. The appellant, as we have seen from

the testimony, claims the vein in dispute is continuous in the same direction; the respondent that it changes its course and is faulted. The books tell us that vein-making fissures have been formed, by contraction on drying, as in an argillaceous stratum, or on cooling from fusion, or from heat attending metamorphism; by subterranean movements, pre-eminently those that have attended mountain making, by the disruptive or expansive action of vapors resulting from volcanic action; and by corroding vapors, or by solutions from the deep which sometimes enlarge the fissure, especially where the rock is limestone. Fissures formed through volcanic action, and enlarged by corroding solutions and vapors, are deep-seated and frequently contain large cavities. That the vein in question was so formed by such action and solutions or vapors appears from the testimony, as we have already observed. It will be perceived that to define the word 'vein,' that represents a thing of so many and varied characteristics, is a matter attended with difficulty. Especially is this true if such definition, in view of the statutes which deal with mineral-bearing veins only, is to convey an accurate idea of the thing itself. . . .

"We do not thus interpret the law. What may constitute a sufficient discovery toward a location of a claim may be wholly inadequate to justify the locator in claiming or exercising any rights reserved by the statutes. What constitutes a discovery that will validate a location is a very different thing from what constitutes an apex to which attaches the statutory right to invade the possession of, appropriate the property which is presumed to belong to an adjoining owner. The question of a sufficient discovery of a vein, or the validity of a notice of location upon which the cases, cited by the appellant on this point, are authority is substantially different from the one relating to the continuity of a vein on its depths from the apex, and which tests the rights of the undisputed owner of the surface to what lies underneath and within his own boundaries.

"It is the object and policy of the law to encourage the prospector and miner in their efforts to discover the hidden treasures of the mountains, and therefore, as between conflicting lode claimants, the law is liberally construed in favor of the senior location, but where one claims what, *prima facie*, belongs to his neighbor, because of an apex in the claim and its location, a more rigid rule of construction against the claim prevails, and, as we have already observed, he has the burden to show not merely the vein on its dip may include the ore-bodies in adjoining ground, but that in fact it does so include them. Until he establishes such fact beyond reasonable controversy, he has no rights outside his side lines in another's ground. . . .

"Reverting to the characteristic of a vein or lode, it appearing from the definitions above quoted that its filling must consist of a body of mineral-bearing rock, what value such material should contain is a matter not devoid of difficulty, and no standard of value applicable to all such cases has yet, and probably never will be, devised. It must necessarily depend upon the characteristics of the district or country in which the vein or lode, in particular instance claimed to exist, is located, and upon the character, as to boundaries, of the vein itself. If the country rock, or the general mass of the mountain, outside of the limits of the vein, is wholly barren, slight

values of the vein material, as before stated, would seem to satisfy the law; but if, on the other hand, the rock of the district generally carries values, then undoubtedly, the values, in the vein material, where the boundaries of the vein are not well, or not at all, defined, either on the surface or at depth, should be in excess of those of the country rock; else there can be no line of demarcation, nor, where the rock is generally broken, shattered and fissured, anything to separate it from the adjacent country. Values, therefore, of the filling of a vein, must be considered with especial reference to the district where the vein is found. It is likewise as to a definition of a vein or lode. . . .

"It is true, the appellant claims the open-cuts and the working at depth are substantially all in vein material; but, as we have seen in the judgment of the appellant's witnesses, broken, shattered, and fissured limestone, or crushed and brecciated matter, no matter how barren, constitutes vein material, although such matter and conditions exist, without any defined boundaries, many hundreds of feet to the east and west of Lot 38, in fact throughout that limestone area, so far as it was examined by witnesses, and with no more mineralization than is contained in the general mass of the mountain for more than a thousand feet to the east and west, or through the limestone belt. Is it not difficult to perceive how such material, in the absence of both a hanging- and foot-wall, can be regarded as a vein? Are not the essential characteristics of a vein or lode absolutely wanting? In the absence of the very elements which constitute a vein, as defined by the highest court of our country, how can we hold a vein exists? There appears to be no mineralization in excess of that contained in the country rock; the existence of no body of mineral or mineral-bearing rock in any opening or fissure established. . . .

"It will be observed that the only place where ore, in any considerable quantity, and unmistakable vein matter are found in connection with the dikes is in the immediate vicinity of the ore-channel where it passes through them. Yet, if the appellants' theory that the vein passes through the Finn dike on its dip were well founded, we would expect to find evidences of it passing through it at other points along its strike.

"It seems perfectly intelligible that, when the mineral-bearing solutions ascended from the deep and circulated through the main fissure or series of fissures, they were, by pressure or other of nature's processes, forced through the crushed and shattered rock and loose brecciated material, and that by the metasomatic action of the solutions, the mineral was deposited as far as the rock or material was thus physically prepared for the passage of those solutions. The evidence shows that the rock, at the junction of the dikes and where the vein passed through them, was so prepared, and this accounts for the strong mineralization in that vicinity, and for large ore-bodies, in places like those of the Betsy and the Klondike stopes, leading out from the main fissure or ore-channel. . . .

"Upon careful review and extended discussion of the testimony relating to the underground workings and explorations, and upon deliberate consideration of the main geological features disclosed by the evidence, it seems clear that this great ore-channel was formed by the mineral solutions from the deep

coursing through a fissure or series of fissures deflected from a northerly course at the Cunningham stope to a northwesterly course, and then again, near the Bradley-Consort line, to a more northerly course; that the channel and deposition of ore along its entire length resulted from the same causes and the same processes of nature; that the vein passed through the dikes on its strike and was faulted; and that the ore-bodies in controversy are on its strike and not on its dip, and belong to the owners of the Silveropolis and Consort mining claims. . . .

"It is insisted for the appellant, however, that a 'lode, within the meaning of the statute, is whatever the miner can follow with a reasonable expectation of finding ore'; that, though he sees no ore, yet, if he sees gangue and vein-matter, he discovers the lode; and that whatever material would be sufficient to render valid the location thereon would be sufficient evidence of apex to justify one in following therefrom downward, beyond the side-lines of the location, in the same kind of material and beneath the surface of his neighbor's property."

This decision has received very favorable comment in mining periodicals; and its conclusions seem to be sound. The distinction noted in the latter part between the amount of mineral that is sufficient to validate a claim as a "discovery" and the greater amount required when one owner claims mineral beneath the surface of another's property by reason of extralateral rights is worthy of attention.

Instances of Ore-bodies Considered by the Courts as *not* being Veins in the Legal Sense

It is of as much practical importance in mining litigation to know what is *not* a vein, within the meaning of the statute, as to know what is. Consequently I give below some citations from the leading cases in which what is *not* a vein is discussed. In a California case [9] the deposit in dispute was, "a thin seam of gravel cropping out between an underlying bed of slate rock and an overlying bed of lava rock," and on pursuing the same into the hill "the said deposit was a well-developed channel varying from a few inches to 8 and 10 ft. in thickness, and from 8 or 10 to 40 ft. in breadth, with a well-defined bed and side-walls of slate rock, and capped by a thin stratum of clay with an overlying body of lava rock for hanging-wall." The deposit was inclined about 8 deg. from the horizontal. This deposit the California court decides was not a vein or lode in the legal sense but a placer deposit.

[9] *Gregory et al.* vs. *Pershbaker*, 73 Calif., 109.

In a New Mexico case [10] the court says:

"There may be a contact, and yet no contact vein. The mineral may be exposed at a point upon one claim and followed continuously under the surface from this point to another property, through an undisputed vein between clearly defined hanging- and foot-walls, and still the point at which the mineral is exposed not be the apex of the vein which may have an apex 10 miles distant, or may have no apex at all. It would be the height of foolishness for a court in New Mexico, with our mineral-bearing lime formation extending with the different mountain ranges from Colorado to Old Mexico, to say that mineral cannot be found in lime at a thousand feet depth, or on the surface with a cap of slate or a contact of porphyry."

After the above not very clear discussion the court proceeds to deny to the deposit the apex rights of a vein. The decision is certainly in conflict with some of the decisions cited above, which define affirmatively what a vein is. The court was struggling with the inherent difficulty of applying the Statute of 1872 to the replacement and contact deposits which are so often found in the Southwest.

In an Idaho case [11] the court negatively defines a vein as follows:

"It must be remembered that every seam or crevice in the rock, even though filled with clay, earth or rock, does not constitute a vein, nor every ridge of stained rocks, its cropping. Nor, on the contrary, is it required that well-defined walls shall be developed or paying ore found within them. But something must be found in place, as rock, clay, or earth so colored, stained, changed, and decomposed by the mineral elements as to mark and distinguish it from the inclosing country.

In a California case the court says:

"It is not enough to discover detached pieces of quartz, or mere bunches of quartz not in place." [12]

In another case [13] the court says, in relation to the ore deposits:

"Looking, then, at this metalliferous zone as a whole, at the point where the claims in question lie, it is impossible to find clearly defined boundaries. There is, however, such a zone there, and there is, no doubt, a limit beyond which the rocks are not impregnated with silver, which limit is at present not clearly ascertained. Having such a zone or district, when we find within it

[10] *Illinois Silver and Min. Co.* vs. *Raff*, 7 N. M., 336.
[11] *Burke* vs. *McDonald*, 2 Idaho, 646.
[12] *Jupiter Min. Co.* vs. *Bodie Consolidated Min. Co.*, 11 Fed., 666.
[13] *Mt. Diabolo M. & M. Co.* vs. *Callison*, Fed. Cas., 9886.

fissures like that opened by the Callison, filled with ore, we think we must regard them as veins or lodes . . . a broad metalliferous zone cannot be permitted to swallow up, under the name lode, true fissure vein found within its limits." [14]

When the Controversy is between a Placer and a Lode Claimant

The statute in relation to placers provides,[15] that if a placer is known to include a vein or lode, that such a vein or lode may be included for the patent of the placer on the payment of $5 per acre for a strip of land 25 ft. on each side of the vein, and that if any known vein is not so expressly included, this will be construed as a conclusive declaration that the placer claimant has no right to the vein or lode. But if the vein or lode was *not known* to exist at the time of the patenting of the placer claim, then it belongs to the owner of the placer claim. Under this provision the courts have had occasion to define the term vein or lode or "known vein or lode"; and in such situations the construction of the courts has not been nearly so liberal as when considering the sections relating to lode claims alone.

In *U. S.* vs. *Iron Silver, etc., Co.*, 128 U. S., 673 (683), the court says:

"It is not enough that there may have been some indications, by outcroppings on the surface, of the existence of lodes or veins of rock in place bearing gold or silver or other metal, to justify their designation as 'known' veins or lodes. To meet that designation the lodes or veins must be clearly ascertained, and be of such extent as to render the land more valuable on that account, and justify their exploitation."

Also in *Migeon* vs. *Montana Central Ry. Co.*, 77 Fed., 249 (255), the court says:

"The fact is that there is a substantial difference in the object and policy of the law between the cases where the determination of the question as to

[14] *Meydenbauer* vs. *Stevens*, 78 Fed., 787; *Hayes* vs. *Lavignino*, 53 Pacif., 1020, Utah, 1898; *Justice Min. Co.* vs. *Barclay*, 82 Fed. Cas., 554; *Leadville Co.* vs. *Fitzgerald*, Fed. Cas., 8158; *Shoshone Min. Co.* vs. *Rutter*, 87 Fed., 801; *Nevada Sierra Oil Co.* vs. *Home Oil Co.*, 98 Fed., 683; *Golden* vs. *Murphy*, 75 Pac., 625, 76 Pac., 29, 75 Pac., 625; Eureka Case, 4 Sawyer, 3, 2 Fed. Cas., 4, 548; *Chambers* vs. *Harrington*, 4 Sup. Ct., 428; *Larkin* vs. *Upton*, 144 U. S., 19; *Stevens* vs *Williams*, 1 McCrary, 480, and Fed. Cas., 13, 413; *North Noonday Min. Co.* vs. *Orient, etc., Co.*, 1 Fed., 522, *Iron Silver Min. Co.* vs. *Cheesman*, 8 Fed., 297; *Hyman* vs. *Wheeler*, 20 Fed., 353; *Book* vs. *Justice Min. Co.*, 58 Fed., 106; *Chambers* vs. *Harrington*, 3 Utah, 94, 1 Pac., 362; *Davis Admrs.* vs. *Wiebold*, 139 U. S., 507, 11 Sup. Ct., 628; *Iron Silver Min. Co.* vs. *Mike & Starr Min. Co.*, 143 U. S., 394, 12 Sup. Ct., 543; *Dower* vs. *Richards*, 151 U. S., 658, 14 Sup. Ct., 452; *Montana Cent. Ry. Co.* vs *Midgeon*, 68 Fed., 811; *Bunker Hill, etc. Co.* vs. *Empire, etc., Co.*, 134 Fed., 268.

[15] R. S., 2323.

what constitutes the discovery of a vein or lode between different claimants of the same lode under section 2320, on the one hand, and a 'lode known to exist' within the limits of the placer claim at the time application is made for a patent therefor, under section 2333, in the other. . . . But in construing the provisions of section 2333 it is evident that other questions are to be taken into consideration. This section of the statute was primarily intended for the benefit and protection of the locators of placer claims. If a lode is known to exist within the boundaries of a placer claim, the applicant for a patent must state that fact, and then, by paying $5.00 for that portion of the ground, and $2.50 an acre for the balance, the patent will issue to him, covering both the lode and placer ground; but, if the lode is known to exist and is not included in the application for a patent, then it will be construed as a conclusive declaration that the owner for the placer claim has no right of possession, by virtue of his patent for the placer ground, to the vein or lode. It matters not whether there is a lode or vein actually within the limits, which subsequent developments may prove, if it is not known to exist at the time of the application the patent for the placer claims will include such lode or vein. In such cases the Supreme Court has repeatedly declared that it is not enough that there may have been some indications, by outcropping on the surface, of the existence of lodes or veins of rock in place bearing gold or silver or other precious metals to justify their designation as 'known veins or lodes'; that, in order to meet that designation, the lodes or veins must be clearly ascertained, and be of such extent as to render the land more valuable on that account and justify their exploitation." [16]

When the Controversy is between A Mineral Claimant and a Town-site Patent

The leading case in the class in which the litigation is between vein or lode rights and town-site rights is *Davis's Admr.* vs. *Weibbold,* 139 U. S., 507; and the court states, in this case that the exception of mineral lands in town sites, etc.,

"are not held to exclude all lands in which mineral may be found, but only those where the mineral is in sufficient quantity to add to their richness and to justify expenditure for its extraction, and known to be so at the date of the grant. There are vast tracts of country in the mining States which contain precious metals in small quantities, but not to a sufficient extent to justify the expense of their exploitation. It is not to such lands that the term mineral in the sense of this statute is applicable." [17]

[16] *Mining Co.* vs. *Reynolds,* 124 U. S., 374 (383), 8, Sup. Ct., 598, 603; *Iron Silver, etc. Co.* vs. *Mike, etc., Co.,* 143 U. S., 394 (404), 12 Sup. Ct., 543 (553); *Sullivan* vs. *Mining Co.,* 143 U. S., 431, 12 Sup. Ct., 555; *Brownfield* vs. *Bier,* 39 Pac., 461.

[17] *Alford* vs. *Barnum,* 45 Calif., 482; *Merrill* vs. *Dixon,* 15 Nevada, 401; *Colwell* vs. *Lammers,* 10 Sawyer, 246 (257), *U. S.* vs. *Reed,* 12 Sawyer, 99 (104); *Dughi* vs. *Harkins,* 2 L. D., 721; Case of Samuel W. Spong, 5 L. D., 193; *Cleghorn* vs. *Bird,* 4 L. D., 478; *Comrs. Kings Co.* vs. *Ferguson,* 6 L. D., 218; *Nichols* vs. *Abercrombie,* 6 L. D., 394; *John Downs,* 7 L. D., 71; *Cutting* vs. *Reininghaus,* 7 L. D., 263; *Creswell, etc., Co.* vs. *Johnson,* 8 L. D., 440; Thomas J. Loney, 9 L. D., 83; *Dower* vs. *Richards,* 151 U. S., 658 (662).

This being the expression of the highest court having jurisdiction in this question, may be confidently accepted as the law in all instances in which this particular point is in controversy.

Contest between Mineral Claimant and Agricultural Entryman

In this class of cases the rule as to the sufficiency of mineral is less liberal than when the contest is between two mineral claimants; and the evidence of its mineral character must be reasonably clear because in such case the land is sought to be taken out of the category of agricultural land, while, when the controversy is between two mineral claimants, the question is simply which is entitled to priority.[18]

In late cases in the Federal Court[18a] from Alaska, where the contest was as to amount of mineral that would validate a placer claim as against an agricultural homestead, it was held that gold must be discovered on the placer claim in sufficient quantities to justify a person of ordinary prudence in further expending labor and means with a reasonable prospect of success in developing a valuable mine, but that even if "colors" of gold were found in every pan of gravel in the dry bed of creeks in Alaska, this alone would not be sufficient to take such ground out of the category of agricultural land.

Continuity of Vein Necessary to Give Extralateral Rights

In order that a vein may be followed on the dip it is necessary that there be a continuous vein, but what constitutes a continuous vein in this connection is a thing difficult to define so as to be generally applicable. This element comes prominently into the case of *Iron Silver Min. Co.* vs. *Cheesman,* 116 U. S., 529, from which decision we have already cited the part concerning the definition of a vein. See p. 174. In *Butte etc., Co.* vs. *Society, etc.,* 23 Mont. 177, 58 Pac. 111, the court says:

"A continuous body of mineral or mineral-bearing rock, extending through loose and disjointed rocks, is a lode, as fully and certainly as that which is found in more regular formation; but if it is not continuous, or is not found in a crevice or opening which is itself continuous, it cannot be called by that name. . . . The pursuit of the vein on its dip being, then, the right to be

[18] *Chrisman* vs. *Miller,* 197 U. S., 313.

[18a] *Steele* vs. *Tomana, etc., Co.,* 148 Fed., 678; *Cascaden* vs. *Bartolis* 146 Fed., 739.

guarded, the identity of the vein pursued must be proven, to make the right availing. . . . Identity must always exist. Were there any departure from this rule, the miner might secure the benefit of more than he discovered, which was never contemplated by the law. Identity in mineral deposit should have no significance not usual to identity of many other material things. It means the same thing, or the same vein. It may be said to include a vein that is incessant. But a vein that is incessant or identical in its parts is not necessarily a vein which is continuous in the sense that the continuity or union of its parts is absolute and uninterrupted, — in other words, though a continuity of vein does not preclude identity of vein, yet identity does not necessarily include continuity, in the exact sense just referred to. 'Law of continuity (Math. & Physics),' says Webster's Dictionary, 'the principle that nothing passes from one state to another without passing through all intermediate states!' Speaking exactly by this definition, it would very often be very difficult, if not impossible, for the challenged proprietor of a mineral vein to convince a jury of the continuity of the vein from one part to another, for there might not be continuity by actual contact of the parts, or contiguity, which the precise words or word may literally mean must exist. Were such a rule inexorable, a failure of proof would not infrequently be brought about by the inability of the miner to prove continuity without transition through intermediate states.

"The miner might therefore fall short of that exact measure of evidence required to establish a continuity of vein which excludes any interruption between one and another part of the identical vein, and, judged by too closely interpreted significations, the continuity of the vein might be lost; yet if he prove the identity of his vein by some incessant feature, in our judgment, the right to pursue the lode on its dip is his, and there should remain but the necessity of going to the surface limits to accurately adjudicate the lines defining the right to the vein so identified. Take, for an example of a lack of continuity, but of practical identity, a true fissure vein, lying in a section of country consisting of sedimentary and eruptive rock. The miner may encounter what he calls a 'fault fissure,' — a rupture in the rocks accompanied by a relative movement of the walls. During the readjustment of the country on either side of the fissure, masses of these walls are torn off, and falling into the fissure, become vein filling, termed by geologists, 'conglomerate,' 'breccia,' and 'horse matter,' as the fragments or masses of unbroken country rock found between the walls may indicate. It can be readily seen that if the fissure is found in a slate country, with intrusions of granite, the filling may consist of slate or granite, or both, while there may even be a slate on one wall and granite on the other, or similar or dissimilar formations or fillings on either or the two. The mineralization of the vein — the deposition of the precious metal — occurs subsequent to the rupture only in such places between the walls as form channels or are pervious to mineral solution. Now, the miner's object is to disclose and mine the mineralized portion of the vein, and to do so economically.

"But he will not necessarily continue his exploitation from an initial point. He may work at numerous points on the vein, or he may drive a tunnel through extraneous rock to tap the vein at a point quite remote from

his other workings. If he finds pay ore in one part of his claim, and he finds it occurring in mineralized quartz accompanying slate breccia, and in another part he finds barren granite conglomerate, he is at once confronted with a serious difficulty, — of proving the chances of a continuity by *contiguity* of deposit; but if he has developed his claim so as to prove the existence of a fissure with a certain relative movement between its walls, and he finds ore accompanied by slate breccia, in one part, and broken granite in another, if in this last-considered portion he determines that his new find practically corresponds in dip and strike with the known portions of the fissure, and if the newly-developed walls show certain evidences, by way, perhaps, of striations or corrugations, or otherwise corresponding in dip to those determined in other portions, and the position of the newly-developed deposit occurs approximately in the plane of the fissure, he has practically identified his vein at this point, and is justified in assuming that he can follow the walls just developed, incessantly, until he connects them with the walls determined in other portions of his mine, and he may claim the lawful right to do so under the statutes of the United States.

"The true sense in which there must be a continuity of vein is therefore a qualified one, and not an unqualified, exact one, irrespective or independent of physical conditions found in mining. It may be said, as a paraphrase of the decision cited (*Iron Silver M. Co.* vs. *Cheesman, supra*), that identity is essential and the vein must be continuous, but its continuity may be interrupted, even to a closure of the fissure without destruction of the identity, provided the extent of the interruption, or closure, does not prevent the tracing of the vein or lode through the fissure to be identical in its parts as a geological fact."

Another case in which the question of continuity of vein is discussed is, *Pennsylvania, etc., Co.* vs. *Grass Valley, etc., Co.*, 117 Fed., 509. In this case "complications" occurred in the vein consisting of a pinching out of the vein, but before it pinched out a series of small veins fell therefrom and reunited or joined in another strong vein at a depth of six or eight feet. It was held that such a situation was not such an interruption of the vein as deprived the owners thereof of the right to follow the same extralaterally.[19]

If a valid location is made the locator is entitled to the presumption that his vein so located upon extends through the entire length of his location.[20] And this is true where the contest

[19] *Leadville, etc., Co.* vs. *Fitzgerald*, Fed. Cas., 8, 158; *Stevens* vs. *Gill*, Fed. Cas., 13, 398; *Stevens* vs. *Williams*, Fed. Cas., 13,413; *Hyman* vs. *Wheeler*, 29 Fed., 347; *Cheesman* vs. *Shreeve*, 40 Fed., 787; *Tombstone, etc., Co.* vs. *Way Up, etc., Co.*, 1 Ariz., 426, 25 Pac., 749; *Tabor* vs. *Dexter*, Fed. Cas., 13,723; Snyder on Mines, sec. 790; see also the decision in the Grand Central Mammoth case, quoted on p. 180. *Daggett* vs. *Yreka, etc., Co.*, 86 Pac. 968.

[20] *Armstrong* vs. *Lower*, 6 Colo., 393; *Wakeman* vs. *Norton*, 24 Colo., 192; *Patterson* vs. *Hitchcock*, 3 Colo., 533.

is between a placer and lode location as well as where the contest between two lode claims.[21]

These are the leading decisions and comprise the law on the subject of veins, lodes, etc., in the United States. From them we see that the legal conception of a vein or lode, as those terms are used in the United States statutes, is wider than the scientific use of the term. It includes, of course, the typical fissure or other vein and also a dike, if mineral-bearing, and contact deposits, impregnations, replacements, etc. In fact all of the various forms of ore deposits of Kemp's classification given above under Class II, except subdivisions 1 and 11, would come within the meaning of the word, as used in the statutes, according to the interpretation placed on these terms by the United States Supreme and other courts.

This may seem to the scientific geologist to be a loose and unjustifiable use of the word; but it must be remembered that the courts are called upon to interpret statutory law according to the intent of the whole statute rather than according to the technical meaning of the words in the sciences. At the time of the passage of the statute the erroneous idea prevailed among miners that nearly all ore deposits, other than placers, were found in fissure veins.[22] Widespread geologic investigations since that time have demonstrated that ore deposits occur in many other forms than the typical fissure vein; but the true intent of the law was that the term "vein" or "lode" as used therein should comprise all forms of deposits, except placers, for this was the general understanding of the word among those who were instrumental in securing the enactment of the law, and was also the idea that prevailed in the minds of the legislators. Therefore, the courts have done justly in giving this broad interpretation to the words, for it carries out as nearly as possible the intention of the law-making body.

About as definite a statement as is possible to deduce from the decisions would be that the term *vein* or *lode as used in the United States statutes includes practically all mineral deposits found in "rock in place."*

In the law, like Aaron's rod, the vein has swallowed up all

[21] *San Miguel C. G. M. Co.* vs. *Bonner*, 33 Colo., 207.

[22] See Rickard's remarks, quoted in note on p. 133, as to the prevalence even at the present time of such ideas among working miners.

other forms of ore-bodies. "Whatever may have been the original intent of the framers of the law, there is no question that at present any form of a valuable mineral deposit fitting the term rock in place may be covered with a valid lode claim location." [23]

[23] A. I. M. E., 18-883.

XII

Legal definition of an apex; case of Duggan *vs.* Davey; *definition of strike, dip, etc.*

Legal Definition of an Apex

ONE of the requisites of a location under the vein or lode provisions of the mining law is that it contain the apex of a vein; so that the definition of an apex as well as that of a vein becomes important. In the mathematical sense, an apex means the highest point; but it is not used in this sense in the statute. As used therein it means the edge or termination of the vein which comes to the surface of the earth, forming an outcrop, or which comes nearest to the surface of the earth when the vein terminates before it reaches the surface. In the latter case the vein is frequently referred to as a "blind vein." The Supreme Court says:[1]

"The apex of a vein is not necessarily a point, but often a line of great length. Any portion of the apex on the course or strike of the vein found within the limits of a claim is sufficient discovery to entitle the locator to obtain title."

For a vein to have an apex in the statutory sense it is not necessary that it should appear at the surface. A blind vein has a legal apex as well as a vein that outcrops. The court says[2]:

"If it lies entirely beneath the surface, and the course of its apex can be ascertained by sinking shafts at different points, such shafts may be adopted as indicating the position and course of the vein; and locations may be properly made on the surface above it, so as to secure a right to the vein beneath."

The leading cases on the direct application of the definition of apex as related to specific instances seem to have been most frequently decided in the State courts. Perhaps the most im-

[1] *Larkin* vs. *Upton*, 144 U. S., 19.
[2] *Flagstaff Silver Min. Co.* vs. *Tarbet*, 98 U. S., 463.

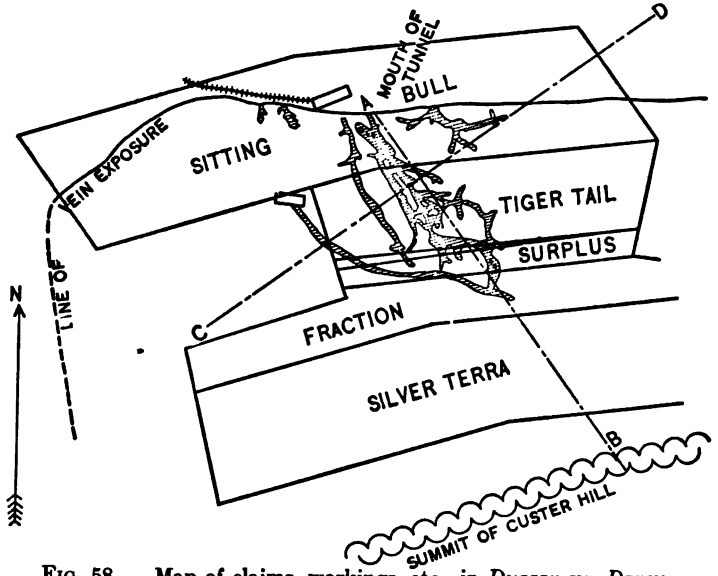


FIG. 58. — Map of claims, workings, etc., in *Duggan* vs. *Davey*.

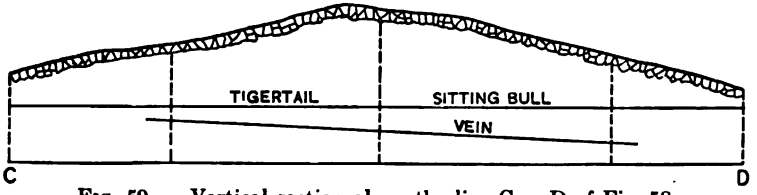


FIG. 59. — Vertical section along the line C — D of Fig. 58.

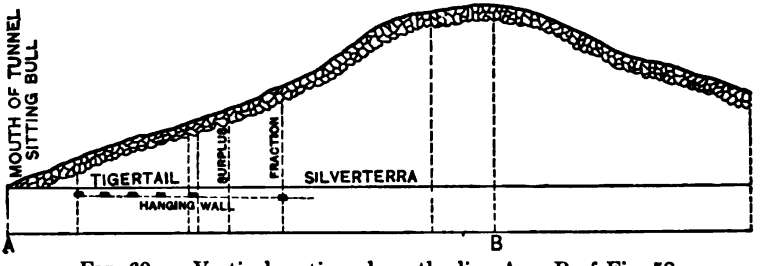


FIG. 60. — Vertical section along the line A — B of Fig. 58.

portant case is that of *Duggan* vs. *Davey*, 4 Dak., 110, 26 N. W., 887, in which the question is elaborately discussed. Fig. 58 shows the claims, and Fig. 61 is a sketch showing Custer Hill and the position of the outcrop on the north and west sides thereof. The court says:

"Beginning, now, at or near the southern extremity of the western slope of Custer Hill, at a point [marked x in the figure] perhaps half-way up the slope, there is found an outcropping layer or stratum of reddish quartzite or metamorphic sandstone several feet in thickness (upward of 10 feet at least), overlaid by a body or stratum of limestone or dolomitic shale of a thickness not definitely ascertained. . . . From this point the croppings may be readily traced, in several places by high reef-like ledges, jutting out boldly from the face of the hill along the western face to its northern extremity. The general bearing of this line of croppings may be stated as north, 11 deg. west, the distance twelve hundred and forty-three feet, the angle of inclination upward from south to north as three deg. twenty-six min. At the northern extremity of the hill this line of outcrop of quartzite, with its overlying limestone or dolomite, turns and extends along the northern slope with a downward inclination, thus gradually nearing the base of the hill, until, at a distance of something over twenty-five hundred feet, it disappears beneath the bed of the creek. . . . The course of the outcrop along the northern slope of the hill is, for a distance of nineteen hun-

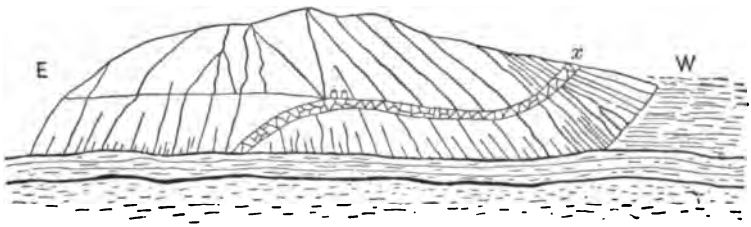


FIG. 61. — Sketch of Custer Hill showing roughly the position of the outcrop on the north and west sides.

dred and fifty feet, north, 70 deg. 30 min. east, and the angle of declination eight degrees from west to east. The 'vein' consists of the underlying quartzite impregnated with iron and silver in various forms, the width of the so-called vein material not being uniform."

The contest was between the owners of the Sitting Bull claim located on the outcrop on the northern slope and the Silver Terra, the workings of the Sitting Bull having extended under the Silver Terra, which ore the Sitting Bull owners claimed by virtue of extralateral rights from having an alleged apex of the vein. The court first decided that the deposit in dispute was a vein within the meaning of the statute, and then, passing to the question of apex, says:

"The definition of the top or apex of a vein usually given is 'the end or edge of the vein nearest the surface.' . . . The definition given is no doubt correct under most circumstances, but, like many other definitions, is found to lack fulness and accuracy in special cases. . . .

"Justice Goddard, a jurist of experience in mining law, in his charge to the jury in the case of *Iron-Silver* vs. *Louisville*, defines 'top' or 'apex' as the highest or terminal point of a vein 'where it approaches nearest the surface of the earth, and where it is broken on its edge, so as to appear to be the beginning or end of the vein.' Chief Justice Beatty, of Nevada, who is mentioned in the Report of the Public Lands Commission of 1879–80 as 'one of the ablest jurists who had administered the mining law,' in his letter to that commission says, after defining dip and course of strike: 'The top or apex of any part of a vein is found by following the line of its dip up to the highest point at which vein matter exists in the fissure.' According to this definition the top or apex of a vein is the highest part of a vein along its entire course. If the vein is supposed to be divided into sections by vertical planes at right angles to the strike, the top or apex of each section is the highest part of the vein between the planes that bound that section; but if the dividing planes are not vertical or not at right angles to a vein which departs at all from a perpendicular in its downward course, then the highest part of the vein between such planes will not be the top or apex of the section which they include.' (Report Pub. Lands Com., 389.)

"I am aware that in several adjudged cases, 'top' or 'apex' and 'outcrop' have been treated as synonymous, but never, so far as I am aware, with reference to a case presenting the same features as the present. The word 'apex' ordinarily designates a point, and so considered the apex of the vein is the summit; the highest point in the vein is the ascent along the line of its dip or downward course, and beyond which the vein extends no further, so that it is the end, or, reversely, the beginning, of the vein. The word 'top,' while including 'apex,' may also include a succession of points, — that is, a line, — so that by the top of a vein would be meant the line connecting a succession of such highest points or apices, thus forming an edge. . . .

"Bearing in mind the descriptions heretofore given of the two lines of outcrop on Custer Hill, if we might suppose that the outcrop along the northerly face were nearly vertical, I do not see how it could be seriously contended that such outcrop, under the circumstances, constituted the top or apex of this stratum of quartzite. . . . I am compelled, therefore, to hold that this outcrop found in the Sitting Bull location is not the top or apex of this vein lode, or ledge, and that such top or apex is not within that location. I must regard that outcrop as merely an exposure of the edge of the vein on the line of its dip."

Consequently, though located on an outcrop, the Sitting Bull claim had no extralateral rights because this outcrop was an exposure of the *dip* instead of the true apex, which must be an exposure on the strike of the vein.

In the case of *Gilpin* vs. *Sierra, etc., Co.*,[3] the principle was the same as in *Duggan* vs. *Davey*. The outcrop was in the Sierra Nevada claim, Fig. 62, and the owners of this claim worked

[3] 2 Idaho, 622, 23 Pac., 547, 1014.

on the vein by tunnels driven parallel to the strike of the vein underneath the adjoining property. Consequently, they were working on the exposed edge of the dip of the vein and not on the apex; and an injunction was granted against the Sierra Nevada owners restraining them from working under the Rambler.

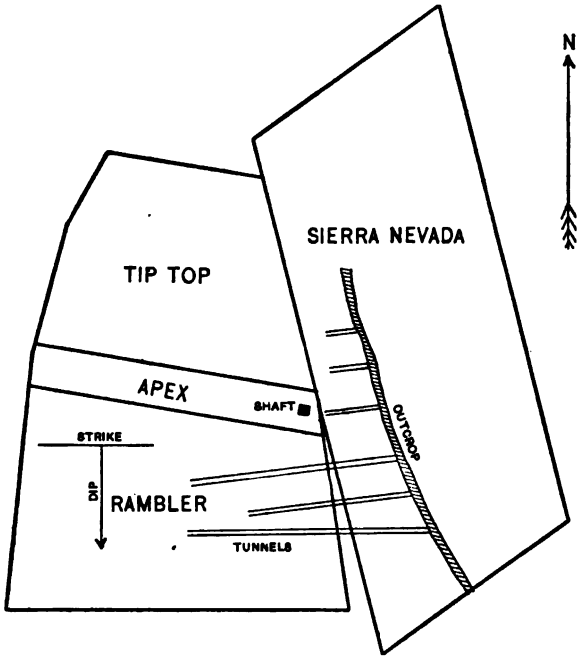


FIG. 62. — Plat of claims and outcrop in *Gilpin* vs. *Sierra, etc., Co.*, from the decision.

In *Iron Mine* vs. *Loella Mine*, 2 McCrary, 121, the court defines "apex" thus:

"The end or edge or terminal point of the lode nearest the surface of the earth. It is not required that it shall be on or near the surface of the earth. If found at any depth, and the locator can define on the surface the area which will enclose it, the lode may be held by such location." [4]

The apex may be a zone of considerable width.[5] It may not be the highest point of a vein, as such highest point may be found in a swell of the vein.[6] A dip exposure will not give apex rights;

[4] *Stevens* vs. *Williams*, 1 McCrary, 480; *Iron, etc., Co.* vs. *Murphy*, 3 Fed., 368.

[5] *Bullion, etc., Co.* vs. *Eureka, etc., Co.*, 5 Utah, 3, 11 Pac., 515.

[6] *Gilpin* vs. *Sierra, etc., Co.*, 2 Idaho, 662, 23 Pac , 547; *Duggan* vs. *Davey*, 4 Dak., 110, 26 N. W., 887; *Colo., etc., Co.* vs. *Turck*, 70 Fed., 301; *Illinois, etc., Co.*, vs. *Roff*, 7 New Mexico, 633, 34 Pac., 544; *Stevens* vs. *Williams*, 1 McCrary, 480 (490).

it must be the true termination or end of the vein to make it a legal apex.[7]

How can the owner of the apex of a vein ascertain whether or not some person may be taking ore from the dip of his vein after it has passed beneath the surface of some other claim? This sometimes becomes a very important question. The owner of a claim may have very strong suspicion that an adjacent mine owner is extracting ore from his vein; but the point at which this is being done may be hundreds of feet below his workings, and it may take him months or years to follow the vein to the point where he suspects a trespass is being committed. In some States statutes have been passed allowing an inspection or survey of underground workings in such cases. These have been held to be constitutional.[8] However, this is only the exercise of a right that the equity courts have long exercised; and it is probable that in the absence of statutory provisions in any State an equity court upon a proper showing would order such an inspection.[9]

Definition of "Strike," "Dip," etc.

Before proceeding to an examination of the various questions of litigation that have arisen under the provisions of the United States statutes respecting veins or lodes, we should have a clear idea of some additional terms frequently used in the discussion of the cases by the courts. The most important of these are the following:

Strike, the direction of the intersection of the vein or lode with the plane of the horizon. Where the surface is horizontal the strike will be the same as the outcrop of the vein; but where the surface is not horizontal, the strike will be different, unless the vein is vertical. Strike is usually described by its direction in relation to the points of the compass; *e.g.*, "strike, north, 10 degrees east." Instead of the word "strike" or "course," which are the terms most commonly used in geological writings, the statute makes use of the phrase, "along the vein or lode."

[7] *Iron-Silver, etc., Co.* vs. *Elgin*, 118 U. S., 196; *Duggan* vs. *Davey*, 4 Dak., 110, 26 N. W., 887; *Eilers* vs. *Boatman*, 3 Utah, 159; Snyder on Mines, secs. 796–797; Lindley on Mines, sec. 307; Raymond, "Law of the Apex," A. I. M. E.

[8] *St. Louis, etc., Co.* vs. *Mont., etc., Co.*, 9 Mont., 288; same case, 152 U. S., 160.

[9] *Duggan* vs. *Davey*, 26 N. W., 887; 6 Morr., 317; 7 Morr., 693; 8 Morr., 14, 21, 29, 17; *State* vs. *District Court*, 25 Mont., 504; same, 26 Mont., 396; same, 26 Mont., 483; 73 Pac., 230.

"The true strike of a vein is a horizontal line, the line of a line run in a vein and lengthwise of the vein." [10]

Dip, the angle which the vein makes with the plane of the horizon; *hade*, the angle which the vein makes with the perpendicular. These are stated in degrees; and while, of course, in the ordinary vein which has an irregular surface the dip varies from point to point, still an approximate or average value can be stated for a given portion of the vein and is usually an important part of the description. The word "dip," also, does not appear in the statute, where the phrases "course downward," "throughout their entire depth," and "exterior parts" are employed in the

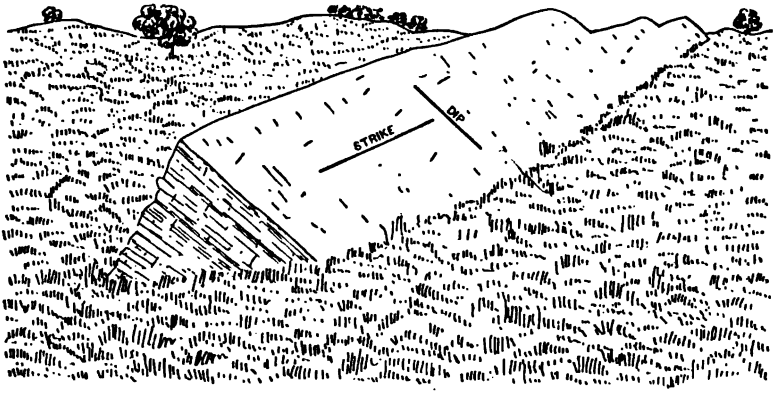


FIG. 63. — Perspective view showing the directions of strike and dip.
From Spurr; Geology Applied to Mining.

same sense as the word "dip" in ordinary scientific use. In the statute of 1866 the word appeared in the following connection: "together with the right to follow such vein or lode with its dips, angles, and variations to any depth"; but this section has been omitted and does not appear in the Revised Statutes. In *Duggan* vs. *Davey*, 4 Dak., 110 (141), the following discussion appears:

"I have spoken of the 'dip' or 'downward course' of the vein, treating these words as synonymous, and so I think they must be regarded. 'Dip' and 'depth' are of the same origin, — 'dip' is the direction or inclination toward the 'depth' — and it is 'throughout their depth' that veins may be followed, and that is surely their downward course."

The word dip is frequently used in the Eureka case.[11]

[10] *Flagstaff, etc., Co.* vs. *Tarbet*, 98 U. S., 463. See Article, *Harvard Law Review*, "A Problem in Mining Law" vol. 16–94 (96).

[11] *Richmond, etc., Co.* vs. *Eureka, etc., Co.*, 4 Sawyer, 302 (326).

XIII

Extralateral rights; relations between the vein or lode and the boundaries of the claim; vein crossing side lines instead of end lines; vein crossing one end line and one side line; vein crossing one end line and terminating within the claim.

Extralateral Rights

THE greater part of the litigation under the United States mining law has originated in the provisions of section 2322, allowing extralateral rights on all veins apexing within a properly located claim. This is not the result of any indefiniteness in said section; for the provisions thereof are plain and simple, and are easily understood by the unlearned miner or prospector as well as by the university graduate engineer or lawyer. As we have shown above, it was practical miners who originated the rule allowing a vein to be followed on its dip to any depth the miner could dig. The principle was the child of justice and necessity conceived in the rocky fastnesses of the ore-bearing mountains, born in rough-and-ready miners' meetings, and, after over 20 years of uninterrupted control of mining rights, elevated to the power of a National statute by the Congress of the United States at the solicitation of the miners themselves. Senator Stewart says, "it is his [the miner's] own bantling, and he loves it."

As applied to ore deposits in the way that they were known and understood in the early days, there was little difficulty in determining the rights of all parties. The difficulties only arose after the exhaustion of the simpler and more easily understood deposits, when closer search, had led to the discovery and development of other forms of ore-bodies which were more obscure and complicated. Having become fixed and rigid in form by statutory enactment, the only thing that could be done by the courts was to apply the principle to the more complicated deposits in the best way the law permitted, and to preserve its spirit and intent as far as possible.

We have already followed the efforts of the courts with respect to the determination of what was included within the meaning of the phrase "vein or lode," as used in the statute, and have seen the substantial justice and liberality of their final determinations and definitions. It must be admitted, that the questions arising out of the relations between the veins or lodes, as these are legally understood, and the boundaries of the claim containing the same, as well as the rights arising therefrom with reference to adjoining claims, have been very puzzling and have cost much time and money to solve. This, however, after thirty-five years of litigation, is now practically accomplished. The law still exists on the statute-books, in spite of efforts made from time to time to alter or repeal it, and probably it will continue in force indefinitely. Instead of indulging in sarcasm and ridicule with regard to it, as some have done, it would seem more profitable to study the decisions of the courts on this aspect of the law and to deduce therefrom the legal rules that they have worked out to govern the rights depending on the vein or lode — the ore deposit — and the boundaries of its own claim and of other claims. Some space is devoted in another chapter to arguments for and against the extralateral feature of the statute.[1]

Relations between the Vein or Lode and the Boundaries of the Claim

The cases arising under the apex provision of the United States statute fall naturally into groups, according to the situation or relationship existing between the apex of the vein and the boundaries of the claim or claims. The final results of the great amount of litigation that has arisen under the apex law can be briefly stated and readily understood by such a grouping of the cases together with a study of the leading cases in each group (usually those of the United States Supreme Court).

Also a series of simple propositions or rules can be stated embodying the principles enunciated by the courts in deciding the cases. These will control the courts when similar situations come before them in future litigation, and therefore constitute the law of such position of the vein with relation to claim boundaries as effectually and fully as if this law was detailed in the statute.[2]

[1] See Ch. xvi, p. 260.

[2] In *Iron-Silver M. Co.* vs. *Murphy*, 3 Fed., 368 (369), the court says: "Courts usually try to find out the correct principles upon which a case should be decided, and when once, after some atten-

Veins Crossing End Lines as Contemplated by Statute

When the relations of the vein and the boundaries of the claim located thereon conform to the provisions of the statute — that is, when the end lines are parallel and the discovery vein crosses both of them — no difficulties or doubts can arise.

1° *Rule.* — **Such vein may be followed extralaterally, within vertical planes through the end lines extended, to any distance the miner may desire.**

A general discussion of the right to follow a vein extralaterally appears, of course, in many cases, a number of the most important of which are cited below.[3]

The hard problems are met when by mistake, ignorance, or pressure of circumstances, the relation of the discovery vein and the end line is not that contemplated by the statute.

Vein Crossing Side Lines Instead of End Lines

The earliest of these questions concerning the anomalous relationship of the vein and the boundaries of the location was that which arose where the vein crossed the side lines of the claim, as surveyed, instead of the end lines. The first case involving this position that came before the Supreme Court was that of the *Flagstaff Silver Mining Co.* vs. *Tarbet*, 98 U. S., 463.[4] The situation of the contesting locations and the vein is shown in Fig. 64. The owners of the Flagstaff (which was 2600 ft. long, being the result of the consolidation of a number of small

tion to the subject, they have arrived at a conclusion as to the rule which should be observed in any cause, it is regarded as a decision which may be followed in subsequent actions of the same kind."

[3] *Flagstaff Silver Min. Co.* vs. *Tarbet*, 98 U. S., 463; *Richmond Min. Co.* vs. *Eureka Consol. Min. Co.*, 103 U. S., 839; *Iron-Silver Min. Co.* vs. *Elgin Min., etc., Co.*, 14 Fed., 377, 4 McCrary, 279; *Walrath* vs. *Champion Min. Co.*, 72 Fed., 978, 44 U. S. App., 291; *Eureka Consol. Min. Co.* vs. *Richmond Min. Co.*, Fed. Cas., 4,548, 103 U. S., 839; *Tabor* vs. *Dexter*, Fed. Cas., 13,723; *Stevens* vs. *Williams*, Fed. Cas., No. 13,414; *North Noonday Min. Co.* vs. *Orient Min. Co.*, 11 Fed., 522; *Jupiter Min. Co.* vs. *Bodie Consol. Min. Co.*, 11 Fed., 666; *Iron-Silver Min. Co.* vs. *Cheesman*, 8 Fed., 297; *Iron-Silver Min. Co.* vs. *Murphy*, 3 Fed., 368; *Hyman* vs. *Wheeler*, 29 Fed., 347; *Cheesman* vs. *Shreeve*, 40 Fed., 787; *Montana Co.* vs. *Clark*, 42 Fed., 626; *Doe* vs. *Waterloo Min. Co.*, 54 Fed., 935; *Consolidated Wyoming G. M. Co.* vs. *Champion M. Co.*, 63 Fed., 540; *Gilpin* vs. *Sierra Nevada Consolidated Min. Co.*, 2 Idaho, 662, 23 Pac., 547, 1014; *Bullion, Beck & Champion Min. Co.* vs. *Eureka Hill Min. Co.*, 5 Utah, 3, 11 Pac., 515; *Crown Point Min. Co.* vs. *Buck*, 97 Fed., 462; *Montana Min. Co.* vs. *St. Louis Min. and Mill Co.*, 102 Fed., 430; *St. Louis, etc., Co.* vs. *Montana Min. Co.*, 113 Fed., 900; 51 C. C. A. 530; *Montana, etc., Co.* vs. *Boston & M. Consol. C. & S. M. Co.*, 27 Mont., 288, 70 Pac., 1114, 71 Pac., 1005; *Dants* vs. *Shepherd*, 72 Pac., 57, 31 Colo., 141; *Empire State, etc., Co.* vs. *Bunker Hill, etc., Co.*, 121 Fed., 973; *Montana, etc., Co.* vs. *Boston, etc., Co.*, 71 Pac., 1005, 27 Mont., 536; *Southern Nev., etc., Co.* vs. *Holmes Min. Co.*, 73 Pac., 759.

[4] See *Transactions*, A. I. M. E., vol. xvii, p. 287, for discussion of this case.

claims) had followed their claim on its dip to the point marked "Ore in Dispute" and were mining ore on the dip outside the boundaries of their property.

The claims in this case were located and patented under the statute of 1866.[5] The contention of the Flagstaff owners was, that they were entitled to 2600 ft. of the lode and the dip rights thereof, although the lode departed from the claim across the side lines instead of the end lines. This ore was also outside the boundaries of the Titus claim, but was included in the dip of

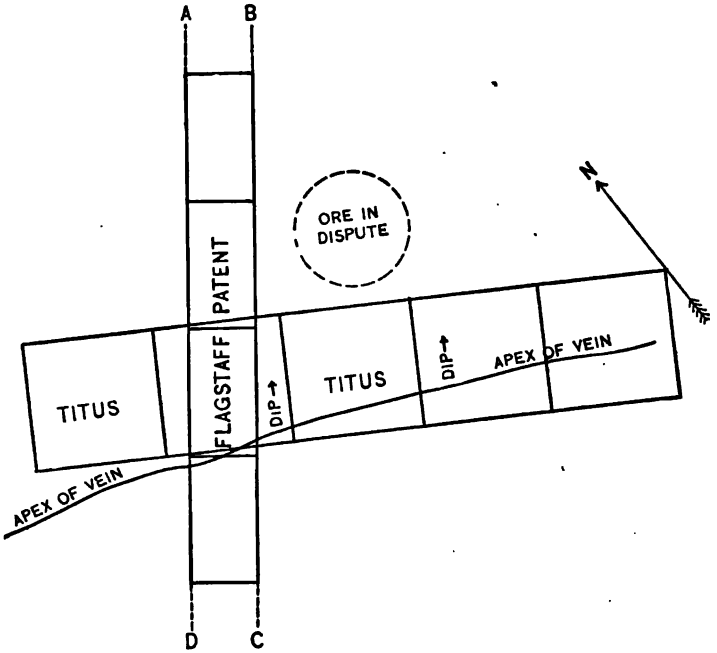


FIG. 64. — Diagram of the claims, apex, etc., in *Flagstaff Silver Mining Co.* vs. *Tarbet*, from plat given in decision, simplified.

the vein which apexed within the Titus and between vertical planes through the end lines thereof. But the Flagstaff was the senior location; and if, as contended by the Flagstaff owners, they had a right to 2600 linear feet of the lode and the dip thereof, then the ore belonged to the Flagstaff, but if they did not have a right to the ore under said conditions, then it belonged to the Titus; for its end lines crossed the vein so that vertical planes through them included the dip of the vein in which the ore-body

[5] Snyder on Mines, sec. 775.

was situated. This was the substance of the dispute as presented to the Supreme Court, which says:

"It is conceded that both parties are working on the same lode or vein of ore. . . .

"We think that the intent of both statutes is, that mining locations on lodes or veins shall be thereon lengthwise, in the general direction of such veins or lodes on the surface of the earth where they are discoverable; and that the end lines are to cross the lode and extend perpendicularly downward, and to be continued in their own direction either way horizontally; and that the right to follow the dip outside of the side lines is based on the hypothesis that the direction of these lines corresponds substantially with the course of the lode or vein at its apex on or near the surface. It was not the intent of the law, to allow a person to make his location crosswise of a vein so that the side lines shall cross it, and thereby give him the right to follow the strike of the vein outside of his side lines. That would subvert the whole system sought to be established by the law. If he does locate his claim in that way, his rights must be subordinated to the rights of those who have properly located on the lode. Their right to follow the dip outside of their side lines cannot be interfered with by him. His right to the lode, only extends to so much of the lode as his claim covers. If he has located crosswise of the lode, and his claim is only 100 ft. wide, that 100 ft. is all that he has a right to. This we consider to be the law as to locations on veins or lodes.

"The location of the plaintiff in error is thus laid across the Titus lode, that is to say, across the course of its apex at or near the surface; and the side lines of the location are really the end lines of the claim, considering the direction or course of the lode at the surface.

"As the law stands, we think that the right to follow the dip of the vein is bounded by the end lines of the claim, properly so called, which lines are those which are crosswise of the general course of the vein on the surface."

In other words, when both of the survey side lines of a mining claim are crossed by the vein, such side lines become end lines, in legal contemplation, for the purpose of fixing extralateral rights. As we shall see hereafter, it is only the crossing of the side lines by the "discovery" vein that has this effect. If after-discovered or "secondary" veins cross the survey side lines, it does not change the legal status of either the discovery vein or the "secondary" vein.[6]

The same interpretation is followed in *Argentine Co.* vs. *Terrible Co.*, 122 U. S., 478, the court saying:

"When, therefore, a mining claim crosses the course of the lode or vein instead of being 'along the vein or lode,' the end lines are those which measure the width of the claim as it crosses the lode. Such is evidently the meaning

[6] See pp. 220 *et seq.*

of the statute. The side lines are those which measure the extent of the claim on each side of the middle of the vein at the surface."

The next case involving this question that reached the Supreme Court was *King* vs. *Amy & Silversmith M. Co.*, 152 U. S., 222. The vein crossed both sides at an acute angle as shown in Fig. 65. The owner of the Amy claimed the right to ore found under the Non-Consolidated in the Amy vein after it had passed the vertical plane through the north line of the Amy, because in the patent to the Amy said north line was called a side line. This, the

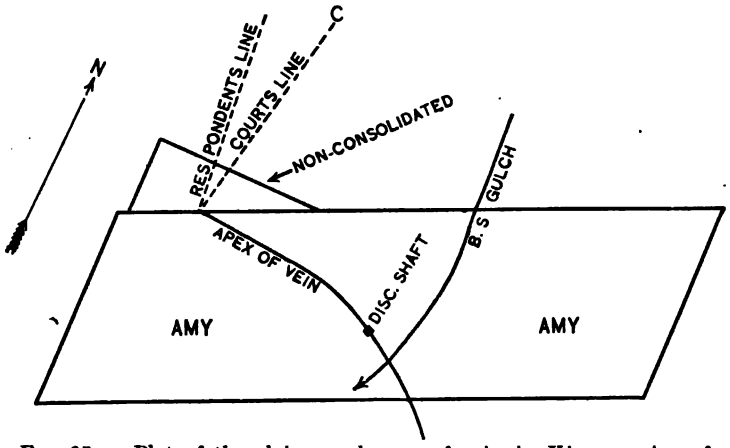


FIG. 65. — Plat of the claims and apex of vein in *King* vs. *Amy & Silversmith M. Co.*, from the decision.

owner of the Amy contended, gave him the right to follow his vein on its dip outside of the vertical plane through this line and mine ore under the Non-Consolidated, although such line was crossed by the vein. The Supreme Court, however, decided that this line, although in the patent called a side line, was in the statutory sense an end line, since it was crossed by the vein, and so limited the extralateral rights of the Amy, instead of the lines marked end lines on the patent.

The court below had decided that the extralateral rights of the Amy claim were limited by plane passed through the line C, drawn at right angles to the vein where it crossed the north line which in the description of the claim was called the side line. The Supreme Court, however, declared that this line, crossed by the vein, was a statutory end line and therefore the Amy claim had no extralateral rights on the north side of this line.

In the next case [7] the Supreme Court, which had apparently avoided any statement as to the status of the original end lines when the original side lines become statutory end lines, says explicitly:

"The course of this vein is across the Last Chance claim instead of in the direction of its length. Under those circumstances, the side lines of that location become the end lines, and the end the side lines."

Although logically implied, the right to pursue the vein outside of such new statutory side lines was not explicitly announced until the case of *Del Monte, etc., Co.* vs. *Last Chance, etc., Co.*, 171 U. S., 55 (89), in which the court says:

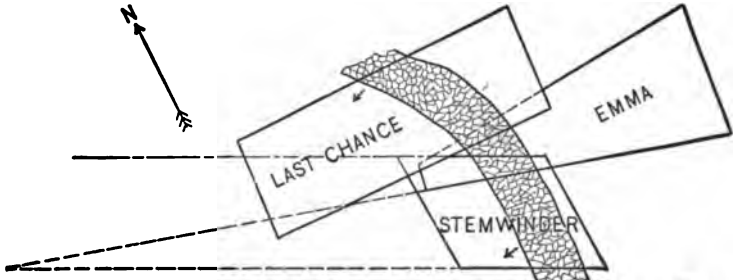


FIG. 66. — Diagram of Last Chance and neighboring claims. From 108 Fed. 190. The Stemwinder was the prior location and had extralateral rights through its side lines, crossed by vein, extended, but lost these rights where in conflict with the Last Chance, by failure to adverse the Last Chances application for patent. *Bunker Hill, etc., Co.* vs. *Empire, etc., Co.*, 109 Fed. 538 (547).

"The end lines, as he [the locator] marks them on the surface, with the single exception hereinafter noticed, place the limits beyond which he may not go in the appropriation of any vein or veins along their course or strike . . . the only exception to the rule that the end lines of the location as the locator places them, establish the limits beyond which he may not go in the appropriation of a vein on its course or strike, is where it is developed; that in fact the location has been placed not along but across the course of the vein. In such case the law declares that those which the locator called his side lines are his end lines, and those which he called end lines are in fact side lines. . . . 'Our laws have attempted to establish a rule by which each claim shall be so many feet of the vein, lengthwise of its course, to any depth below the surface, although laterally its inclination shall carry it ever so far from a perpendicular.'"

Also in *Empire, etc., Co.* vs. *Tombstone, etc., Co.*, 100 Fed., 910 (913), the court says:

[7] *Last Chance, etc., Co.* vs. *Tyler, etc., Co.*, 157 U. S., 683, 687.

"The question here raised and claimed to be novel is this: In such a case, do the end lines become side lines so that the locator may follow the dip of the vein outside of a plane extended vertically downward therefrom?"

Then, stating the contentions of the two parties, the court concludes that the decisions of the United States Supreme Court clearly imply that the vein may be pursued beyond the new side line although these were originally end lines.

Rule. — **The law is well settled, that, when the vein crosses both side lines instead of the end lines, the original side lines become end lines, and that between vertical planes passing through these new end lines the vein may be pursued on its dip to any distance whatever.**

The angle at which the vein crosses the new end lines is immaterial. If it crosses them and they are parallel, the claim carries the right to all of the vein apexing within it, between the vertical planes of such legal end lines extended in their own direction.[8]

Vein Crossing One End Line and One Side Line

Another important situation arises where the vein crosses one of the end lines of the claim and then passes out of the claim across one of the side lines. This was a situation that caused much discussion in mining litigation, and gave rise to conflicting decisions in the lower courts, until it was finally disposed of by a decision of the United States Supreme Court. In the cases involving this question which arose in the lower courts it was argued and held that since, by the doctrine announced by the United States Supreme Court in the Flagstaff case, the side lines became end lines when crossed by the vein, therefore when the vein crossed both an end and a side line that the original end line must of course be projected vertically against the vein and also the side line crossed by the vein; so that such vein would be denied extralateral rights altogether. It was a long time before this situation was passed upon by the Supreme Court, but when such a case finally reached that tribunal it was decided that a

[8] *Empire, etc., Co.* vs. *Bunker Hill, etc., Co.*, 131 Fed., 591; *Tyler, etc., Co.* vs. *Sweeney*, 54 Fed., 284; *Last Chance, etc., Co.* vs. *Tyler*, 61 Fed., 557; *Tyler, etc., Co.* vs. *Last Chance, etc., Co.*, 71 Fed., 848; *Iron-Silver, etc., Co.* vs. *Elgin, etc., Co.*, 118 U. S., 196 (207); *Walrath* vs. *Champion, etc., Co.*, 171 U. S., 293; *Stevens* vs. *Williams*, Fed. Cas., 13,413, 1 McCrary, 480; *Watervale, etc., Co.* vs. *Leach*, 33 Pac., 418; *New Dunderberg, etc., Co.* vs. *Old*, 97 Fed., 150; *Cosmopolitan, etc., Co.* vs. *Foote*, 101 Fed., 518; *Parrott, etc., Co.* vs. *Heinze*, 64 Pac., 326, 53 L. R. A., 491.

new end line parallel to the original end line, crossed by the vein, should be projected into the dip from the point where the vein departed from the claim across a side line.[9] The situation was present and expressly recognized by the court in a previous case,[10] but other considerations determined how this case must be decided, so the court avoided expressing any opinion on this phase of the case. However, in the Del Monte case the situation came squarely before the court, which says:

"The fourth question presents a matter of importance . . . that question is, 'If the apex of a vein crosses one end line and one side line of a lode mining claim, as located thereon, can the locator of such vein follow it upon its dip beyond the vertical side line of his location?'"

Then, after reviewing the cases involving analogous situations and remarking that this particular question had not been decided by itself, the court says:

"Nowhere is it said that he [the locator] must have a vein which either on or below the surface extends from end line to end line in order to pursue that vein in its dip outside the vertical side line. . . . The locator is given the right to pursue any vein, whose apex is within his surface limits, on its dip outside the vertical side lines, but may not in such pursuit go beyond the vertical end lines. And this is all that the statute provides. Suppose a vein enters at an end line but terminates half-way across the length of the location, his right to follow that vein on its dip beyond the vertical side lines is as plainly given by the statute as though in its course it had extended to the farther end line. It is a vein, 'the top or apex of which lies inside of such surface lines extended downward vertically.' And the same is true if it enters at an end line and passes out at a side line."

The shape of the locations involved is shown in Fig. 67. The New York was the senior location, the Del Monte second, and the Last Chance third. The patent to the Last Chance included all that was not in conflict with the New York. The vein entered the Last Chance at its north end and left its patented ground at the point *r* where it passed into the New York claim. The extralateral rights of the Last Chance were bounded by a vertical plane passing through the north end line and another parallel thereto, through the point *r*, which gave the ore in dispute to the Last Chance.

At the same term of the Supreme Court the case of *Clark* vs.

[9] *Del Monte, etc., Co.* vs. *Last Chance, etc., Co.*, 171 U. S., 55.
[10] *Last Chance, etc., Co.* vs. *Tyler*, 157 U. S., 684.

Fitzgerald, 171 U. S., 92, was decided by the court as involving exactly the same principle, and extralateral rights were allowed although the vein crossed both an end and a side line. Fig. 68 shows the situation in this case. The Black Rock was the senior location. The owner of the Black Rock extracted ore from underneath his surface on the dip of the vein at the point marked

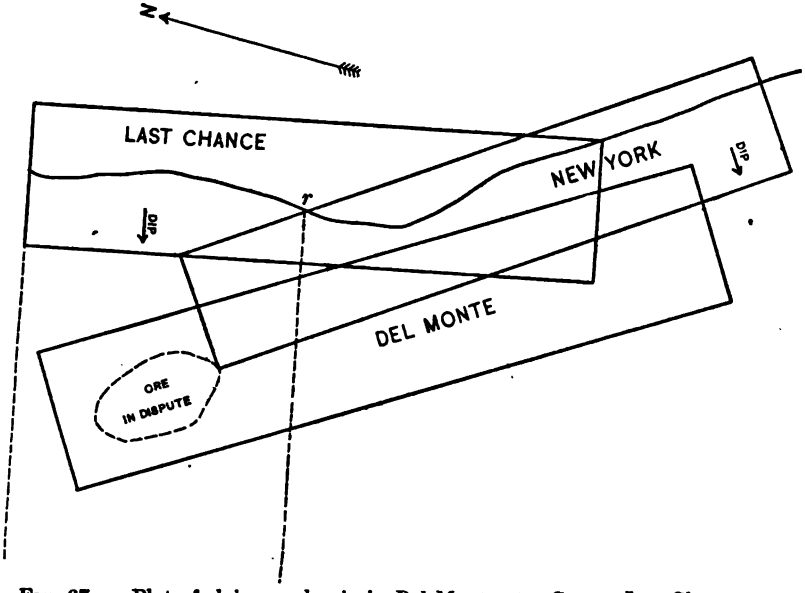


FIG. 67. — Plat of claims and vein in *Del Monte, etc., Co.* vs. *Last Chance, etc., Co.*, from the decision.

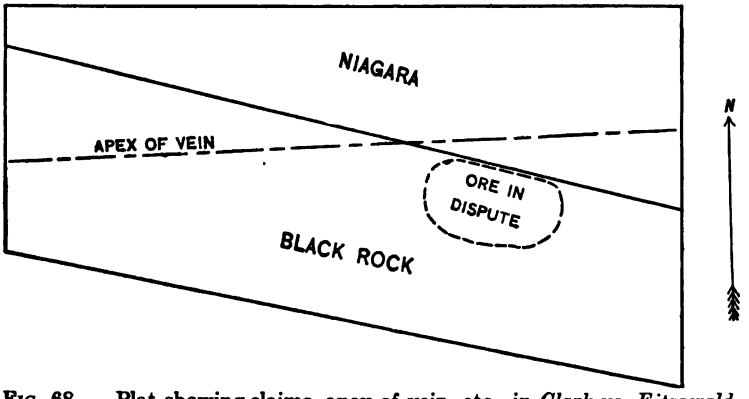


FIG. 68. — Plat showing claims, apex of vein, etc., in *Clark* vs. *Fitzgerald*.

"Ore in Dispute" east of the point where the apex of the vein crossed the boundary line between the two claims. It was held that the ore belonged to the owner of the Niagara, and the owner of the Black Rock must account for the ore he had mined and removed. This interpretation of the Supreme Court has been consistently followed by all the courts since the above decisions were announced.

30 *Rule.* — **It is one of the fundamental and well-settled principles of mining law, that where the vein or lode crosses one end line and a side line of the claim, such claim will have extralateral rights on the vein, bounded by a vertical plane through the end line crossed by the vein and by another parallel to the first passing through the intersection of the vein and the side line which it crosses.**[11]

Vein Crossing One End Line and Terminating Within the Claim

The situation in which a vein crosses one end line and terminates within the claim without reaching any other boundary is analogous to that in which the vein crosses an end line and a side line. Such a vein has extralateral rights bounded by a vertical plane passing through the end line crossed and a parallel plane through the termination of the vein. The law on the situation is laid down by the Supreme Court in *Del Monte, etc., Co.* vs. *Last Chance, etc., Co.*, 171 U. S., 55 (88), although this particular situation did not exist in said case and the law was only stated *arguendo*. The court says:

"Every vein whose apex is within the vertical limits of his surface lines passes to him by virtue of his location. He is not limited to only those veins which extend from one end line to another, or from one side line to another, or from one line of any kind to another, but he is entitled to every vein whose top or apex lies within his surface lines . . . he is entitled to them throughout their entire depth . . . between vertical planes drawn downward as

[11] *Colorado, etc., Co.* vs. *Turck*, 54 Fed., 262, 4 C. C. A., 313, 12 U. S. Ap., 85; *Tyler, etc., Co.* vs. *Sweency*, 54 Fed., 284, 4 C. C. A., 329, 7 U. S. Ap., 463; *Consolidated, etc., Co.* vs. *Champion, etc., Co.*, 63 Fed., 540; *Stevens* vs. *Williams*, Fed. Cas., 13,413, 1 McCrary, 480; *Last Chance, etc., Co.* vs. *Tyler, etc., Co.*, 61 Fed., 557; *Del Monte, etc., Co.* vs. *New York, etc., Co.*, 66 Fed., 212; *Tyler, etc., Co.* vs. *Last Chance, etc., Co.*, 71 Fed., 848; *Tombstone, etc., Co.* vs. *Way Up, etc., Co.*, 1 Ariz., 426, 25 Pac., 794; *Wolfley* vs. *Lebanon, etc., Co.*, 4 Colo., 112; *Johnson* vs. *Buell*, 4 Colo., 557; *King* vs. *Amy, etc., Co.*, 9 Mont., 543 (Modified, 152 U. S., 222), *Fitzgerald* vs. *Clark*, 17 Mont., 100, 42 Pac., 273; *Republican, etc., Co.* vs. *Tyler, etc., Co.*, 79 Fed., 733; *Del Monte, etc., Co.* vs. *Last Chance, etc., Co.*, 171 U. S., 55; *Parrott, etc., Co.* vs. *Heinze*, 64 Pac., 326, *Southern, etc., Co.* vs. *Holmes, etc., Co.*, 73 Pac., 759; *Ajax, etc., Co.* vs. *Hilkey*, 72 Pac., 447, 31 Colo., 131.

above described, through the end lines. . . . This places a limit on the length of the vein beyond which he may not go, but it does not say that he shall not go outside the vertical side lines unless the vein in its course reaches the vertical planes of the end lines. Nowhere is it said that he must have a vein which either on or below the surface extends from end line to end line in order to pursue that vein on its dip outside the vertical side lines. . . . Suppose a vein enters at an end line, but terminates half-way across the length of the location, his right to follow that vein on its dip beyond the vertical side line is as plainly given by the statute as though in its course it had extended to the farther end line."

However, the actual situation was present in *Carson, etc., Co.* vs. *North Star, etc., Co.*, 73 Fed., 597, in which the vein extended across one end line and terminated abruptly about three-fourths

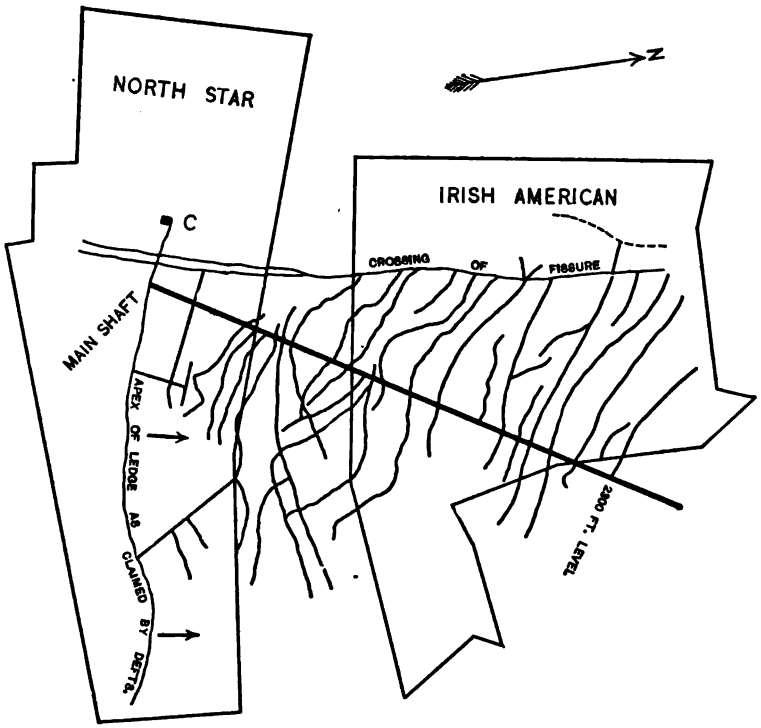


FIG. 69. — Map of claims, workings, etc., in *Carson, etc., Co.* vs. *North Star, etc., Co.*, from the decision.

of the way across the term. Fig. 69 shows the position of the vein in this case. The claims were very irregular in shape, having been formed by the consolidation of a number of smaller claims located

before the enactment of any mining law by Congress. These possessed extralateral rights by reason of the miners' rules and customs and were afterward patented under the authority of the United States statutes, thus confirming such rights. It is true the end lines were not parallel, but this, the court says, is not necessary under the circumstances of this case, and then proceeds:

"Conceding, however, that the ledge intersects the east end line, from whence it extends no further than about 2200 ft. westerly to the point 'C' fixed by the witness Morse as the place where he found the croppings of the ledge, what are the defendants' underground rights? . . . It is therefore concluded that the defendant [owners of the North Star claim] may follow its ledge on its descent under the Irish-American claim, and to any depth, between a perpendicular plane drawn through the east end line of its claim and another similar parallel plane crossing such claim at the point fixed as the western terminus of the ledge, being designated by 'C,' and westerly from the east end line 2200 ft. measured along the straight central line upon the plat and along the like line upon the defendants' Exhibit 8: provided, that defendant shall in no event pursue its ledge west of a perpendicular plane extended through the west end line of its claim."

These decisions are in accord with the decisions where the vein crosses an end line and a side line, and may be taken as an equally well-settled principle of mining law.

4 C *Rule.* — **When a vein crosses one end line but terminates within the claim without reaching any other boundary line, such vein has extralateral rights between a vertical plane through the end line crossed and another parallel plane passing through the termination of the vein.**

The situation where a vein begins and ends wholly within the boundaries of the claim has not been expressly adjucated by the Supreme or other courts. But there is no good reason why such a vein should not have extralateral rights. In the Del Monte case, quoted above, the court says:

"Nowhere is it said that he must have a vein which either on or below the surface extends from end line to end line in order to pursue that vein on its dip outside the vertical side lines."

If it is not necessary for the vein to cross both end lines in order to have extralateral rights, neither would it seem to be necessary for it to cross either of them, provided it did not cross the side lines.

Rule. — **Where a vein begins and ends within a claim, extra-lateral rights would probably be allowed bounded by vertical planes parallel to the original end lines of the claim and passing through the terminations of the vein.**

The possibilities when such a vein as described above is parallel to the end lines, and if extended, would cross the side lines at right angles, are the same as if a secondary vein existed in the same situation. This question is discussed in chapter XIV, and would, in all probability, be decided in the same way.

XIV

Extralateral rights continued; vein crossing one side line twice; end lines not parallel; secondary "veins"; vein outcropping on both sides of a side line; broad vein crossing side line at an angle; veins uniting on the dip; cross veins; horizontal veins; veins can be followed extralaterally only on vein itself; intervening prior dip rights; end lines moved by agreement of the parties; conflict between mining claim and agricultural patent.

Vein Crossing One Side Line Twice

THE situation in which a vein crosses the same side line twice, but does not cross any end line, was first before a court in the case of *Catron* vs. *Old*, 23 Colo., 455. The diagram of the claim as given in the report of the case is reproduced in Fig. 70. As this shows, the side line of the Fulton claim, crossed twice by the vein, was not a straight line. At the time this case was before the Colorado court, the Supreme Court had not yet passed upon the situation of a vein entering at an end line and

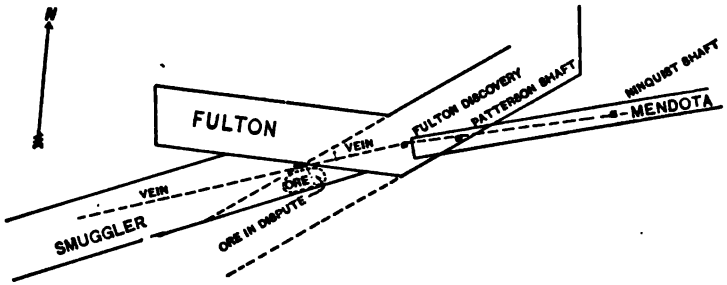


Fig. 70. — Diagram of the claims and vein in *Catron* vs. *Old*, from the decision.

passing out at a side line. The Colorado court, after a lengthy and not very clear discussion of this point (the only one in the case), concludes that the side line crossed twice by the apex of the vein became an end line or end lines, and denied all extralateral rights whatever to the vein. The fact that the side line crossed

by the vein was not a straight line, was not mentioned in the discussion of the case and cannot be regarded as having any influence in the decision of the same, because, as we shall see hereafter, it is not legally necessary that a side line should be a straight line. This is necessary only in the case of an end line.

An almost exactly similar case was before the United States Court of Appeals for the ninth circuit in *St. Louis, etc. Co.* vs. *Montana, etc., Co.*, 104 Fed., 664. As will be seen by an examination of Fig. 71, reproduced from the report of the case, the vein

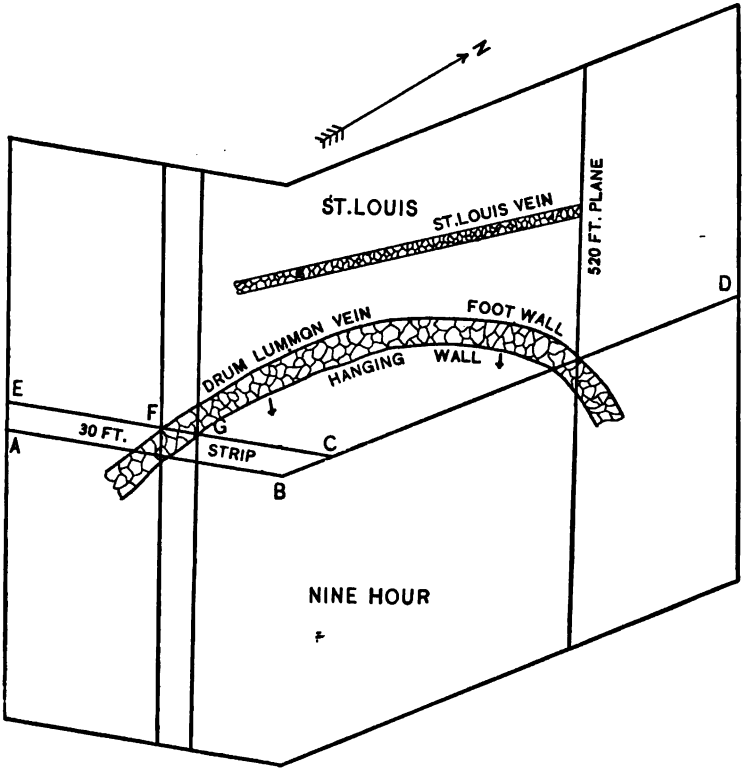


FIG. 71. — Plat of the claims and veins in *St. Louis, etc., Co.* vs. *Montana, etc., Co.*, 104 Fed. 664, from the decision.

crossed a side line twice. The court decided that this vein, the Drum Lummon, which crossed the side line E — C — D twice, had extralateral rights. In this case, however, the Drum Lummon was not the original vein with reference to which the claim had

been located. The original vein (the St. Louis) crossed the end lines of the claim as surveyed and, as we shall hereafter see, a secondary vein, such as the Drum Lummon, has its extralateral rights determined by the end lines of the claim which cross the original vein. It would seem, therefore, that the decision in this case might be placed on this ground, but Ross, one of the justices of this court, writes a dissenting opinion in which he states that the case affirms "the existence of extralateral rights in respect to a vein which enters and departs from a side line only, of a mining claim," and asks for further discussion and consideration before final determination of the question; apparently, without recognizing the special conditions produced by the fact that the Drum Lummon was a "secondary" lode.

In the case of *Waterloo, etc., Co.* vs. *Doe*, 82 Fed., 45, the reverse case was presented. A vein was alleged to leave the side line of a claim and pass into another claim, but in its onward course it curved back and passed again within the claim across the same line. The court held that under such state of facts the first claim had no rights to such part of the vein the apex of which was outside said claim. But with reference to such second claim the vein passed in and out again across one side line, and so was in the position of the vein in the case of *Catron* vs. *Old, supra*. In the Waterloo case the court does not pass directly on the ownership of the part of the vein in the second claim. But, if it does not belong to the first claim, it must belong to the second claim, and, if this is true, there does not seem to be any good reason why such second claim would not have extralateral rights with reference to such vein.

Lindley on Mines, sec. 584, contends that in the above-described situation the vein has no extralateral rights. Snyder on Mines, sec. 859, contends for the contrary interpretation, and rests his contention on the decision in the Drum Lummon case, cited above.

Rule. — **The matter must be regarded as not settled, until directly passed upon by the Supreme Court, but the strong probability seems to be, that extralateral rights will not be denied to a vein, even if it should cross the same side line twice.**

Such an interpretation of the law would more nearly accord with the tendency shown by the Supreme Court in its decisions

on the different situations mentioned above, to give extralateral rights wherever possible. Justice Brewer says [1]:

"Every vein whose apex is within the vertical limits of his surface lines passes to him by virtue of his location. He is not limited to only those veins which extend from one end line to another, or from one side line to another, or from one line of any kind to another, but he is entitled to every vein whose top or apex lies within his surface lines."

This language would certainly include the situation of the vein entering and passing out of a claim across the same side line.

End Lines not Parallel in Locations under Law of 1872

Under the statute of 1866 it was not necessary that end lines should be parallel in order to give extralateral rights, and, although this law has been repealed, still locations made while it was in force are governed by its provisions, and questions arising thereunder have appeared from time to time and necessitated decisions thereon by the courts. There are still some further possibilities in such situations that have not been adjudicated by the courts. The number of claims, however, patented under the statute of 1866 was not great at any time, and very nearly all of them are now exhausted properties; so that the questions liable to arise in connection with the same are not now of any general importance and I will not attempt any statement of the decisions that have been rendered or of undecided questions, as they would not be of practical importance at this date in enough cases.

In a recent California case the Supreme Court of that State states that where a location made under the statute of 1866 with non-parallel but converging end lines (in the direction of the dip) was patented under the provision of the law of 1872, the patent reciting that it was issued in pursuance of the Acts of 1866, 1870, and 1872, such location has extralateral rights within vertical planes through such end lines although the same are non-parallel, and the U. S. Supreme Court sustained this ruling. [2]

But locations made under the law of 1866 were, by express provision in the later statute, allowed to be patented under the law of 1872, and, as the latter statute gave the right to all veins

[1] *Del Monte, etc. Co.* vs. *Last Chance, etc., Co.*, 171 U. S., 55 (88).

[2] *Central Eureka M. Co.* vs. *East Central Eureka M. Co.*, 79 Pac., 834; same case, 204 U.S., 266.

apexing in the location, while the former only gave the right to the one vein located, many locations made under the statute of 1866 were patented according to the provisions of the law of 1872. These locations, however, were often irregular in shape and had end lines not parallel. Also, some locations made after the enactment of the law of 1872 failed to have parallel end lines owing to various causes. Grouping all these cases together, we have a fairly consistent series of decisions of great importance.

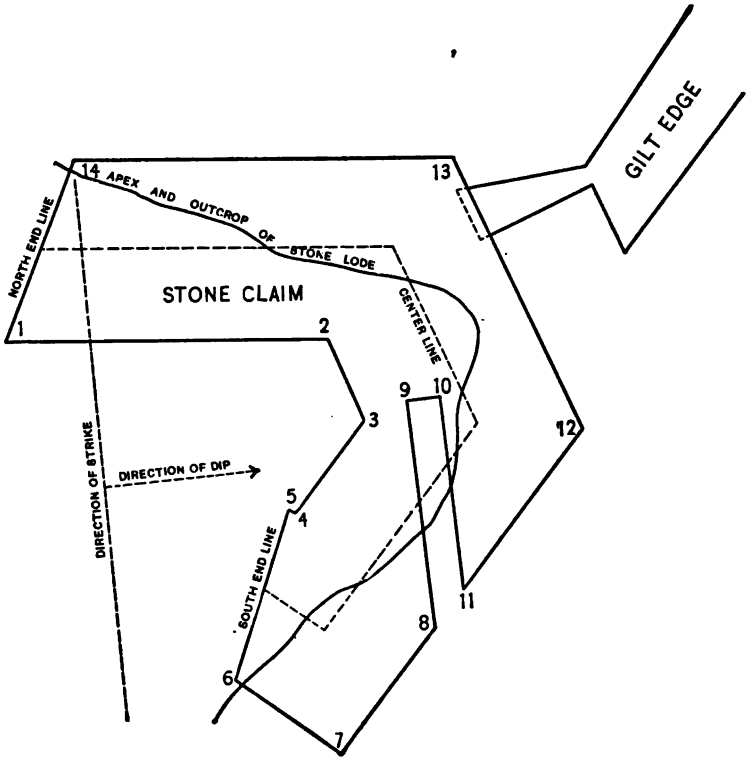


FIG. 72. — Plat of claims and out crop in *Iron, Silver, etc., Co.* vs. *Elgin, etc., Co.*, or "Horseshoe" case from the decision. The directions of the compass are not given in the decision, but the line 12–13 is N. 18° W. so that the top of the diagram as here given is approximately north.

The first case involving this question to reach the Supreme Court was *Iron Silver, etc., Co.* vs. *Elgin, etc., Co.*, 118 U. S., 196.[3] In this case the property was located and patented under the law of 1872. The shape of the location is shown in Fig. 72

[3] See *Transactions*, A. I. M. E., vol. xvii, p. 781, for discussion of this case.

and the case is commonly called the "Horseshoe" case because of the shape of the claim. The suit was by the owners of the Gilt Edge claim for ore extracted from underneath their surface. The defense was, that the vein from the Stone claim extended under the Gilt Edge claim, and that the owners were only pursuing said vein on its dip as they had a legal right to do. But the court says:

"The exterior lines of the Stone claim form a curved figure somewhat in the shape of a horseshoe; and its end lines are not and cannot be made parallel. What are marked on the plat as end lines are not such. The one between numbers 5 and 6 is a side line. The draughtsman or surveyor seems to have hit upon two parallel lines of his 9-sided figure, and apparently for no other reason than their parallelism called them end lines. We are, therefore, of opinion that the objection that, by reason of the surface form of the Stone claim, the defendant could not follow the lode existing therein in its downward course beyond the lines of the claim was well taken."

This, therefore, deprived the Stone claim, having the horseshoe shape, of extralateral rights on account of the non-parallelism of its end lines; and the same interpretation has been followed in all subsequent similar cases.

In *Montana, etc., Co.* vs. *Clark*, 42 Fed., 626, the claim whose rights were in dispute was in the form of an isosceles triangle and the court says: "Having no parallel end line, they cannot do it"; that is, cannot follow their vein outside of their side line.

In *Hickey et al.* vs. *Anaconda Copper M. Co.*, 81 Pac., 806, the court says:

"This gives to the plaintiffs extralateral rights within the Odeon territory upon the Nipper vein within planes extended in fan shape. This cannot be justified upon any principle of law with which we are acquainted."

Rule. — **If the legally determined end lines of a claim are not parallel, the location has no extralateral rights on the discovery vein nor on any other. Its rights are confined between vertical planes through all of its boundaries.**

This principle applies also where the side lines of the claim, not being parallel, become legal end lines because of mistake in making the location so that the discovery vein crosses the side lines. Therefore, although there is no statutory requirement that the side lines should be parallel, it is prudent to make them so whenever possible, so that if they should turn out to be, legally,

end lines instead of side lines, extralateral rights will not be denied to the claim.

The statute provides that in case several contiguous locations have been made and the ownership thereof has passed to one person or corporation, that a patent may be issued embracing all of the claims. The question arose first in the case of *Carson City, etc., Co.* vs. *North Star, etc., Co.*, 73 Fed., 597, also in 83 Fed., 658, as to what the rights of the owners of such a claim would be, the boundary being irregular in shape. Fig. 69 shows the shape of the claim. The court decides that if the property embracing several claims, but patented in one, is irregular in shape, that this fact does not deprive the owner of extralateral rights, and says:

"We are of opinion that the defendant was not required to show the separate lines of any of the original locations embraced within the surface boundaries of its patented claim. It was enough for it to show that a lode running in an eastwardly and westwardly direction, and having its apex within the surface boundaries of the patented ground of the North Star, extended, in its dip downward, into the workings of the Irish-American ground owned by the plaintiff in error. . . . The extralateral right conferred by the statute is but an incident of a valid lode location."[4]

Can claims be combined so that all together, by being patented as one property, they will get rights to ground that neither would have separately? This is a conceivable situation, but apparently it is one that has not yet been before any court.[5]

Rights in Relation to "Secondary" Veins in a Location

The law of 1872, as we have seen, gives the owner of the location not only the "known vein," or vein on which the location was made, but also all other veins apexing within the boundaries of the location. The question arose a number of times in the lower courts as to the extralateral rights of these "secondary veins" when they crossed the side lines instead of the end lines of the location. Was the side line an end line to this "secondary" vein, and the original end line a side line under which such vein could be followed extralaterally, or were the side lines with ref-

[4] *St. Louis, etc., Co.* vs. *Kemp*, 104 U. S., 636; *Doe* vs. *Sanger*, 23 Pac., 365 (Calif.); *Cheesman* vs. *Shreeve*, 40 Fed., 787. See also p. 211 as to original locations, etc., in this case.

[5] Snyder on Mines, sec. 852.

erence to the known, or "discovery" vein also side lines for all other veins?

This question was finally settled in *Walrath* vs. *Champion Min. Co.*, 171 U. S., 293, in which the court quotes its decisions on the various situations previously stated and then says: "These propositions we affirm with the addition that the end lines for the original veins shall be the end lines of all the veins found within the surface boundaries." This settles the law of the

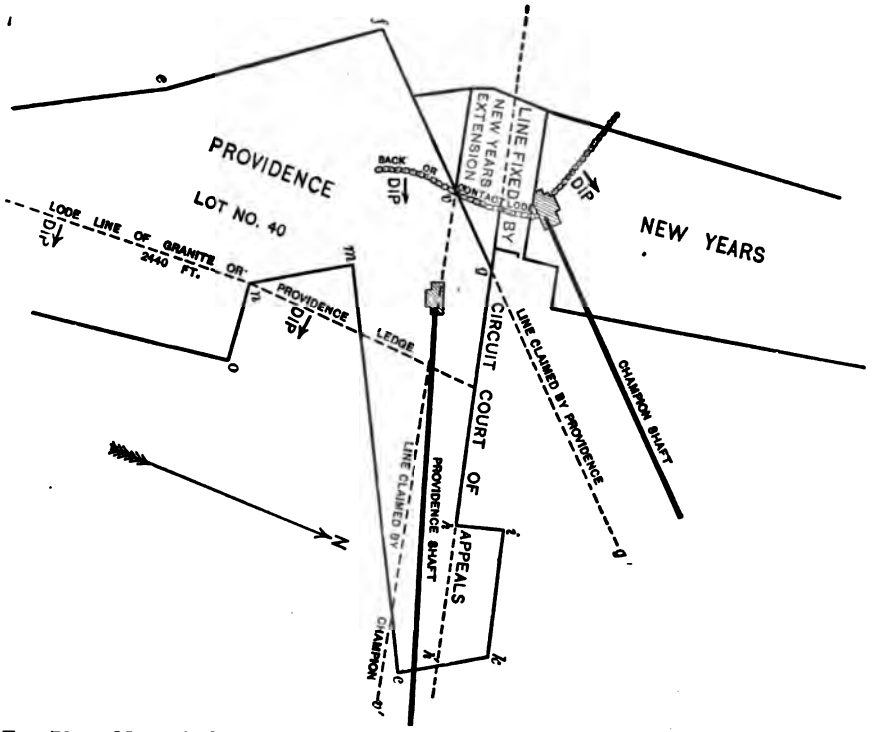


FIG. 73. — Map of claims, veins, etc., in *Walrath* vs. *Champion Min. Co.*, from the decision.

situation in question, although it has been discussed again incidentally in some subsequent cases.[6]

Figure 73 reproduced from the report of the case, shows the shape and situation of the respective locations and the veins.

[6] *Walrath* vs. *Champion Min. Co.*, 63 Fed., 552; *Walrath* vs. *Champion Min. Co.*, 72 Fed., 978; *Cosmopolitan Min. Co.* vs. *Foote*, 101 Fed., 518; *St. Louis Min. & Mill Co.* vs. *Montana Min. Co.*, 104 Fed., 664.

The Providence was a consolidation of 31 locations made in 1857 under the miners' rules and customs then in force. In 1871 a patent was obtained for the property under the law of 1866. By this patent, rights were granted only on the known or discovery lode which is called on the map "Granite or Providence" ledge; but upon the passage of the law of 1872 the right to all other veins apexing in said location became vested in the owner thereof by virtue of a special provision of said statute.

Afterward, the "Back or Contact" lode, as shown on the plat, was discovered. The dispute arose between the owners of the Providence property and the "New Year's Extension" as to the rights of the respective party on the dip of the "Contact" lode. The owners of the New Year's Extension claimed that their rights were bounded by a vertical plane through the line v—v' which was a prolongation of their south end line. On the other hand, the Providence owners claimed that their rights on the vein extended to the vertical plane through the line f—g—g', on the theory that this line became an end line for the Contact vein because it was crossed by this vein.

But the Supreme Court refused to adopt the views of either party and decided that the line g—h—h' which was crossed by the "discovery" or Providence lode was the end line for the new or "secondary" lodes as well as for the original lode, so that the rights of the respective parties were bounded by a vertical plane dropped through this. This was a confirmation of the decision of the United States Circuit Court of Appeals. This decision has been criticized, as regards the location of the legal end line made by the court.[7] It is certain that it is not in harmony with later decisions as to the location of the end line when a vein crosses a boundary line of a claim which is not an end line. These later decisions, however, were concerning locations made and patented under the law of 1872, so that perhaps on this ground they may be distinguished from the decision in the above case. All this, however, does not affect in the least the authority of the decision as to "secondary" veins and their rights.

Rule. — **The end lines for the original or discovery vein are also the end lines for all other or "secondary" veins apexing in**

[7] 16 Harv. Law Rev., 94.

the claim even though such secondary veins cross the side lines of the claim instead of its end lines.

This rule, that the end lines for the original or discovery lode are also end lines for all other or "secondary" lodes apexing in the claim, taken in connection with that regarding a vein crossing an end line and a side line, gives rise to the possibility of a dispute as to rights under a situation which arose in the case of the *Ajax, etc., Co.* vs. *Hilkey*, 31 Colo., 131, 72 Pac., 447. The decision states the case and conclusion reached so clearly, and the reasoning is such a fine example of what a legal discussion should be, that we cannot do better than reproduce the diagram Fig. No. 74 accompanying the case and give all of the decision

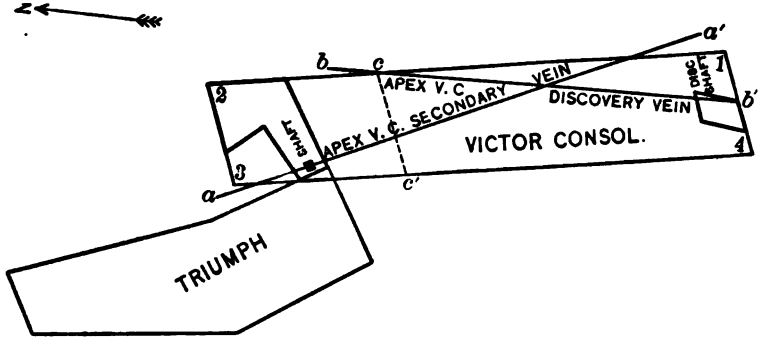


FIG. 74. — Plat of claims and veins in *Ajax, etc., Co.* vs. *Hilkey*, from the decision.

relating to the subject. The point before the court was one of the instructions given to the jury in the lower courts. The Supreme Court of Colorado says:

"Both parties agree that by it the jury were, in effect, told that if the discovery vein of a lode mining claim on its strike departs through a side line, no extralateral rights attach to any other vein apexing within the claim beyond the point of such departure. . . .

"The apex of the discovery vein of the Victor Consolidated is represented by *b, b.'* It enters the claim at the south end line, and its course in the main runs parallel with the claim as surveyed, but passes out through the east side line, about 1000 feet from the south end line. *a, a'* is the vein which, as contradistinguished from the discovery vein, we call the secondary vein, which the evidence tended to show passes diagonally across the location, entering it through the west, and leaving it through the east side line. The Triumph claim is correctly delineated on the map. If the ore taken from the underground workings of the Triumph was taken from any vein apexing

within the Victor Consolidated, as some of the evidence tended to show, it was from this so-called secondary vein. Stating the contention again, in a concrete form, the jury were told if the discovery vein of the Victor Consolidated crossed the east side line at *c*, then the rights of the plaintiff to ore outside of its surface boundaries in any vein having its apex therein is limited to two parallel bounding planes, one drawn through the south end line 1, 4 of the location, as originally established, and the other passing through the claim at the point where the discovery vein leaves the east end line and parallel to the south end line at *c*, *c'*. The north end line, or bounding plane, of this right is the dotted line *c*, *c'*, and the south bounding plane the south end line of the location 1, 4. Plaintiff's extralateral rights as to all veins within the surface lines were, by this instruction, restricted to that part of the claim south of the line *c*, *c'*, and in that part between this line and the north end line of the claim he was given none whatever, though about 500 ft. of the apex of the secondary vein was found in this latter segment.

"The three propositions of the law said to be established by the decisions, of which the fourth one stated by appellees is said to be a necessary corollary, are:

"1. There can be but one set of end lines or bounding planes for a single location, and these limit the extralateral right upon all lodes or veins apexing therein.

"2. These end lines or bounding planes are determined by the strike of the discovery vein with reference to the located side and end lines of the claim.

"3. Where the apex of the discovery vein passes through one end and one side line the extralateral right upon such vein will be bounded by a vertical plane drawn downward through the crossed end line and another vertical plane parallel thereto, but operating at the point where the apex leaves the side line.

"The fourth proposition they thus express: 'The necessary logical sequence of these propositions is, that where the discovery vein on its strike departs through a side line, no extralateral rights attach to any other vein apexing within the claim beyond the point of such departure.'

"Since appellant concedes the first three propositions, there is no necessity for discussing them or citing the authorities upon which they rest. But the alleged deduction therefrom appellant vigorously combats, and that presents the question for our decision. We first observe that that part of appellees' argument to the effect that where a location is laid across, instead of along, the discovery vein, the end lines become the side lines of the location, and the side lines become the end lines, is not pertinent to anything now before us, and in so far as the deduction depends on such proposition, it is without support. There is no dispute between counsel as to this doctrine of shifting of side and end lines, in the case supposed, but it is wholly inapplicable here, for the Victor Consolidated location is laid *along* the course of the discovery vein, and this vein enters the claim through the south end line, and passes out under the east side line. Besides this, the location is patented, and there is authority for saying that its end lines, as chosen by the locator and described by the patent, are, for all purposes and under all circumstances, to be taken as the fixed end lines.

"But conceding the correctness of all three propositions, as to which the counsel upon both sides are in accord, we cannot agree with learned counsel for appellees in their ingenious argument that the fourth proposition, which they must establish in order to sustain the instruction complained of, is a logical sequence of either, or all, of the others. It is quite true that there can be but one set of end lines for one location, and these must perform that function not only for the discovery vein, but for all other veins apexing within the surface lines. (*Del Monte M. & M. Co.* vs. *Last Chance M. & M. Co.*, 171 U. S., 55; *Walrath* vs. *Champion Mining Co.*, 171 U. S., 293, 297, 308.)

"This, however, does not mean that all such veins have exactly the same extralateral rights, nor can it be said that only so much of a secondary vein as apexes within that part of the claim where the apex of the discovery vein is found has such rights. In the Walrath case, *supra*, which was twice before the Circuit Court of Appeals (63 Fed., 552; 72 Fed., 978) and once before the Supreme Court of the United States, there are some expressions in the opinions of the Circuit Court of Appeals from which, taken alone, it might be inferred that under facts like those here present, the owner of a claim would have extralateral rights in the discovery vein even beyond the point where, on its strike, it leaves the side line, and that the bounding planes, within which such rights are to be exercised, must be drawn through the two end lines. But appellant makes no such contention here, and is content with extralateral rights in the discovery vein only up to the point of its departure from the east side line, so that, for our present argument, we assume that to be the true doctrine.

"The end lines constitute a barrier beyond which a locator cannot follow a vein on its strike, whether it be a discovery or secondary vein, and they also limit the bounding planes within which his extralateral rights are to be exercised in following such vein on its dip. In exercising such extralateral rights the locator cannot, in any case, pursue the vein on its dip beyond the bounding planes drawn through the end lines, but, as we have said, appellant is content to be restricted in the exercise of such rights in the secondary vein to planes drawn parallel to the end lines and passing, the one through the claim at the point where the vein enters, and the other where it departs from, the surface line of the location. The extent of the right depends upon the length of the apex, and the extralateral rights are measured not necessarily by the end lines — and only so when the vein passes across both end lines — but by bounding planes drawn parallel to the end lines passing through the claim at the points where it enters into, and departs from, the same.

"It would seem, therefore, necessarily to follow that the extralateral right depends, *inter alia*, upon the extent of the apex within the surface lines, and while the end lines of the claim as fixed by the location are the end lines of all veins apexing within its exterior boundaries, the planes which bound such rights of different veins may be as different as the extent of their respective apices, though all such planes must be drawn vertically downwards parallel with the end lines. It makes no difference in what portion of the patented claim the apex is. Its extralateral rights under this rule can easily be ascertained. The apex of a secondary vein need not be in the same por-

tion of the claim as is the apex of the discovery vein. The statute does not say so. The decisions heretofore made certainly do not so require. The three propositions deduced from these decisions do not logically lead to that doctrine. While, as we have said, there is no decision upon the exact point, yet we think there are cases, in addition to those already cited, which necessarily lead to this conclusion, among which are *Cons. Wyoming G. M. Co.* vs. *Champion M. Co.*, 63 Fed., 540, 546. While this court, in *Catron* vs. *Old*, 23 Colo., 433, criticized this case, it did not do so as to the point now under consideration. It was with reference to the doctrine of comparative direction of the lode, which left to the jury, as a question of fact, whether a vein extends more along, than across, the claim, that the criticism went; and we there said this introduced an element of uncertainty which, if possible, should be avoided. . . .

"Our conclusion is that for all veins, both discovery and secondary, of a patented claim, the owner has extralateral rights, at least for so much thereof as apex within the surface lines; that such rights as to secondary veins are not confined to such veins as apex within the same segment of the claim in which the apex of the discovery vein exists; and while the end lines of the location, as fixed and described in the patent, are the end lines of all veins apexing within the surface boundaries, and may constitute the bounding planes for such extralateral rights, and in no case can the locator pursue the vein on its dip outside the surface lines beyond such planes continued in their own direction until they intersect such veins, yet these bounding planes, which in all cases must be parallel to the end lines, need not be coincident."

The reasoning of this decision is eminently sound and in accord with the general tendency of the interpretation of the mining statutes by the Supreme Court. Consequently, there is every reason to believe that if this situation ever comes before the Supreme Court, the doctrine of the Colorado case will be upheld.

Rule. — **A "secondary" vein is allowed extralateral rights within the entire area between the original end lines of a claim in which the "discovery" vein crosses one end line and one side line although the "discovery" vein may not extend the full length of the claim and as to it extralateral rights are bounded by a vertical plane through the end line it crosses and another parallel therewith through the point where the "discovery" vein leaves the claim across the side line.**

Vein Outcropping on Both Sides of a Side Line

Another situation about which disputes have arisen is where a lode outcrops on both sides of a side line between two claims. Is the vein divided between the two claims, or does one get it

all? This is settled in the case of *Argentine, etc., Co.* vs. *Terrible, etc., Co.*, 122 U. S., 478, in which the court says:

"Assuming that on the same vein there were surface outcroppings within the boundaries of both claims, the one first located necessarily carried the right to work the vein."[8]

One of the leading cases in the lower courts on this situation is *Last Chance, etc., Co.* vs. *Bunker Hill, etc., Co.*, 131 Fed., 579. There is no diagram given in the report of this case, but one of the same properties is given in *Empire, etc., Co.* vs. *Bunker Hill, etc., Co.*, 114 Fed., 417, which is reproduced herewith in Fig. 75. In the decision the court observes:

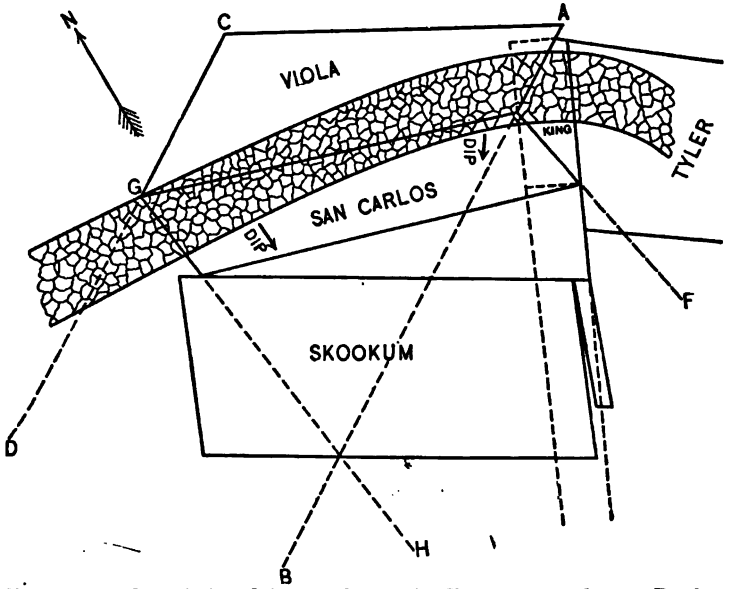


FIG. 75. — Plat of the claims and vein in *Empire, etc., Co.* vs. *Bunker Hill, etc., Co.* 114 Fed., 417, from the decision.

"The findings and diagram annexed to the opinion of the court below show that the vein or lode, in question, is a very wide one, and crosses both end lines of each of the plaintiff in error's patented claims, Viola and San Carlos, the common side line of these two claims being entirely on the vein or lode. The Viola, being the older of the two locations, would, under the doctrine of the *St. Louis, etc., Co.* vs. *Montana, etc., Co.*, 44 C. C. A., 120, 104 Fed., 664, and like decisions there cited, be entitled, in pursuit of its extra-

[8] *St. Louis, etc., Co.* vs. *Mont., etc., Co.* 104 Fed., 664; see also *Bullion, etc., Co.* vs. *Eureka, etc., Co.*, 5 Utah, 3, 11 Pac., 515; *Empire, etc., Co.* vs. *Bunker Hill, etc., Co.*, 131 Fed., 591; *U. S., etc., Co.* vs. *Lawson*, 134 Fed., 769; *Last Chance, etc., Co.* vs. *Bunker Hill, etc., Co.*, 131 Fed., 579.

lateral rights, to the entire width of the vein underground within its bounding planes."

Rule. — **The whole of the dip of a vein which outcrops on both sides of a side line between two claims belongs to the senior location.**

The reason for this rule is well stated in United States Circuit Court of Appeals [9] as follows:

"This is so because it has been the custom among miners, since before the enactment of the mining laws, to regard and treat the vein as a unit and indivisible, in point of width, as respects the right to pursue it extralaterally beneath the surface; because usually the width of the vein is so irregular, and its strike and dip depart so far from right lines, that altogether it is impracticable, if not impossible, to continue the longitudinal bisection at the apex throughout the vein on its dip or downward course; and because it conforms to the principle pervading the mining laws, that priority of discovery and location gives the better right.

Broad Vein Crossing Boundary at an Angle

A situation analogous to the one discussed above arises where a vein of considerable width crosses the side line between two claims at an angle. As we have seen, under the discussions of veins which cross one end line and pass out of the claim across a side line,[10] a plane parallel to the end line is dropped through the intersection of the vein and side line to limit the extralateral rights on such vein. But what shall be the exact location of this line: at the point where the middle line of the vein crosses the side, or at some other point? This question has not been before the Supreme Court, but has been decided by the United States Circuit Court of Appeals for the ninth circuit in *St. Louis, etc., Co.* vs. *McCoy*, 104 Fed., 669. This is the same property that was in litigation in *Montana, etc., Co.* vs. *St. Louis, etc., Co.*, 102 Fed., 430, and the dispute this time is over the rights to the Drum Lummon lode which, as shown in Fig. 71, p. 215, crosses the side E—C at an angle. The vein covers this line from F to G, a distance of 25 ft., and the question is, where should the end line for the Drum Lummon lode be placed: at G or at F? The opinion of the court is as follows:

"The defendant in error maintains that the words 'top or apex' cannot be construed to mean 'top or apex or any part thereof,' and that, under the

[9] *United States M. Co.* vs. *Lawson*, 134 Fed., 769.
[10] *Ante*, p. 207 *et sq.*

strict construction necessary, extralateral rights would not follow when the whole of the apex was not within the surface lines. If this be the correct view of the language of the statute, manifestly neither party herein would be entitled to pursue the vein in depth between the 108-foot plane and the 133-foot plane, since the apex of the vein between those points, while crossing the side line, is not wholly within either claim. For the purposes of illustration, suppose the vein were regular and vertical for the 25 feet between the two planes mentioned, crossing the side line at the same angle. The boundary rights between the parties could not then be determined by the application of a vertical plane extending to the center of the earth along the side line, and 25 feet in horizontal width, since that would be constructing an end line to that extent, and there is no authority in the statute or in the decisions for any such actions. It might be said that the vein could be equitably cut by a plane parallel with and midway between the 108 and 133-foot planes, thus bisecting the portion of the vein in controversy, and giving half of the disputed ground to each claim. But neither is there any authority for such a determination by the court. It would seem, therefore, that by some rule the entire 25 feet should be construed to apex in one of the locations. And as, where the rights of two mining locators are apparently equal with respect to mining ground, the element of priority of location is controlling, preference being generally given to the senior locator (*Argentine, etc., Co.* vs. *Terrible, etc., Co.*, 122 U. S., 478, 484, 7 Sup. Ct., 1356, 30 L. Ed., 1140), the entire vein would be given to the plaintiff in error. If this be the true doctrine when a vein is vertical, why should there be any change in its application when the vein dips? . . . therefore, the only deduction which can be made from the foregoing views is that inasmuch as neither statute nor authority permits a division of the crossing portion of the vein, and the weight of authority favors the senior locator, the entire vein must be considered as apexing upon the senior location until it has wholly passed beyond its side line."

This interpretation of the statute has been followed in other cases in which this situation has been present, so that it is a well-settled principle of mining law.

Rule. — **Where a vein crosses a boundary line between two claims at an angle, the senior location takes the whole of the vein on the dip for the entire length that such vein or any part thereof is contained within the boundary of such senior claim.**[11]

Veins Uniting on the Dip

The situation in which veins that are separate on the surface afterward unite as they pass downward into the earth, but the apexes of which are found in different claims, is met by section

[11] *Bunker Hill, etc., Co.* vs. *Idaho, etc., Co.*, 106 Fed., 471; Snyder on Mines, sec 308 *et sq*

2336 of the United States Revised Statutes, the provisions of which we may adopt for the following

Rule. — **Where two or more veins unite, the oldest or prior location shall take the vein below the point of union, including all the space of intersection.**

Under this plain provision of the statute it is hardly possible that any litigation could arise, but the principle has been applied incidentally in the cases cited below.[12]

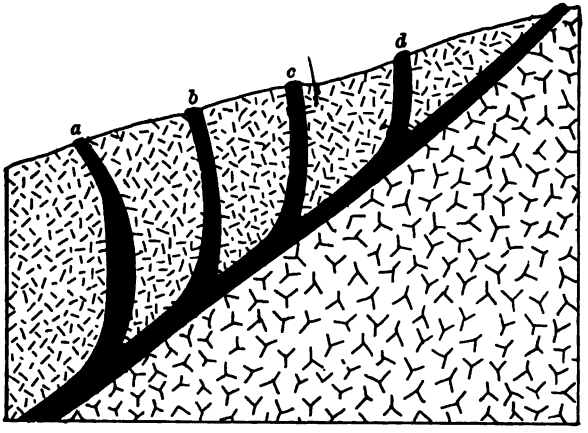


FIG. 76. — Generalized structure of the Comstock lode. An example of veins uniting on the dip.
From Stretch; Prospecting, Locating and Valuing Mines.

CROSS VEINS

The closely related question of cross veins is provided for by the same section, 2336, of the statutes, which is:

"Where two or more veins intersect or cross each other priority of title shall govern, and such prior location shall be entitled to all ore or mineral contained within the space of intersection; but the subsequent location shall have the right of way through the space of intersection for the purpose of the convenient working of the mine."

There are two possibilities under this section: (1) Where the veins cross or intersect each other on their strike, whether such intersection occurs at the surface or at some depth below the surface and the junior location overlaps the senior location;

[12] *Colorado, etc., Co.* vs. *Turck*, 50 Fed., 888; *Consol., etc., Co.* vs. *Champion Min. Co.*, 75 Calif., 78; *Omar* vs. *Soper*, 11 *Colo.*, 380; *Lee* vs. *Stohl*, 13 Colo., 174; *Roxanna G. M. Tunneling Co.* vs. *Cone*, 100 Fed., 168.

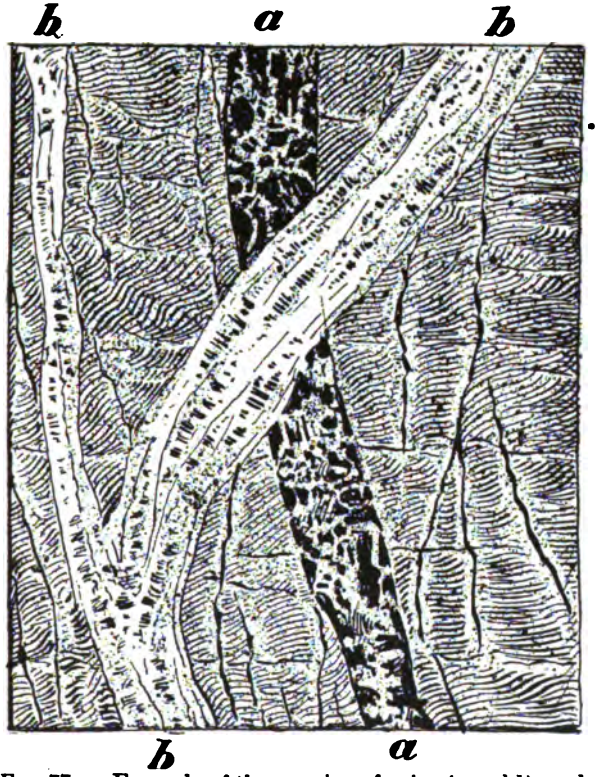


FIG. 77. — Example of the crossing of veins (*a* and *b*), and veins uniting on the dip *b*, *b*, *b*. The Segen Gottes Stehenden vein of Simon mine at Freiberg.
From Beck; Nature of Ore Deposits.

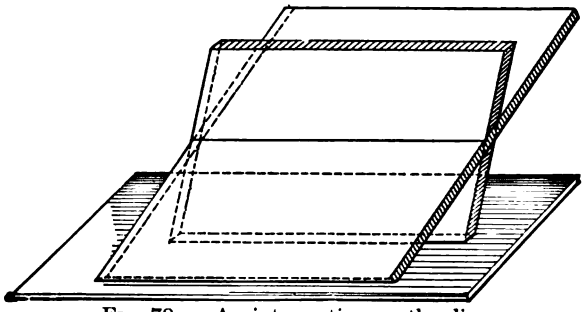


FIG. 78. — An intersection on the dip.
From Beck; Nature of Ore Deposits.

(2) where the veins intersect or cross on their dip — for example, where a perpendicular vein is intersected below the surface by a vein whose dip is 45 deg., but whose strike is the same or approximately the same as that of the perpendicular vein (Fig. 78).

The first case involving this section of the statute which came before any court seems to be *Branagan* vs. *Dulaney*, 8 Colo., 408. The court says:

"Strange as it may seem, the question here presented has never, to our knowledge at least, been passed upon either by the Supreme Court of the U. S., or by the supreme court of any State. . . . The only question presented by the record before us is, What are the respective rights of the parties under the above sections in respect to the ownership of minerals and the right of way when a junior location crosses a senior location and the veins thereof are 'cross-veins?'"

This is the situation (1), referred to above; and the court, although recognizing the fact that under section 2322 of the Revised Statutes — which gives the locator of a mining claim all the veins, lodes, and ledges the tops or apexes of which lie inside of the surface lines of such claim — the senior claim would take all the cross veins, nevertheless holds that there is a conflict between this section and section 2336, and that by the common rule of statutory interpretation, where there is a conflict between two sections of the same statute the latter section prevails, decides that the cross vein, except the place of intersection, belongs to the junior claim. This decision was followed by two others in Colorado.[13] This became known as a Colorado doctrine, but was not followed in any other State or jurisdiction and was criticized in several decisions in other States. The Colorado supreme court finally recognized the unsoundness of this doctrine, and when the question again came before it, in the case of *Calhoun, etc., Co.* vs. *Ajax, etc., Co.*, 27 Colo., 1, it repudiated this doctrine, saying:

"The law, as announced in *Branagan* vs. *Dulaney*, has led to much confusion, and has been a fruitful source of litigation. . . . Our conclusion is, that the provisions of section 2336, applied to location made under the Act of 1872 as well as before, referred to the intersection or crossing of veins either upon their dip or strike."

and then decides that the junior locator can only work his vein when the intersection is upon the dip, because, if the intersection

[13] *Lee* vs. *Stahl*, 9 Colo., 208; *Morgenson* vs. *Middlesex, etc., Co.*, 11 Colo., 176.

was upon the strike, the apex of his vein would come within the lines of the senior location and would belong to that location. The uniform course of the decisions of other States has been the same.

The same question came before the Supreme Court in the case of *Calhoun, etc., Co.* vs. *Ajax, etc., Co.*, 182 U. S., 499, in which the court decided in agreement with the lower courts, as outlined above, that the junior locator has no rights when the intersection of his vein with the vein of the senior location is upon the strike, but that the above-cited section of the statute only applied where the intersection is upon the dip, saying: "Section 2336 imposes a servitude upon the senior location, but does not otherwise affect the exclusive rights given the senior locator." [14]

Rule. — **Even though a junior location overlaps a senior location (which the courts hold is permissible) such junior location has no rights in any vein contained therein after such vein crosses, on its strike, into the boundaries of an overlapped senior location. Section 2336 of the Revised Statutes, concerning intersecting veins, only applies where veins intersect on the dip and the apexes are in different claims.**

In Colorado and Montana the owner of the junior claim has the right to drift on the vein in the part thereof which is within the senior location, but must give up the ore obtained in doing so to the owner of the senior claim. In California and Arizona he has no such right.

Horizontal Veins

As we have before remarked, the theory of the statute seems to be that mineral deposits are found in veins or lodes which extend downward in directions which depart more or less from the perpendicular, but which neither closely approach nor become horizontal. The case of a vein which is horizontal was apparently not in the mind of the legislators, and, indeed, it is probable that at the date of the passage of the statute of 1872 no instance was known of a vein which assumed a horizontal or even an approximately horizontal direction. However, in 1879 the ques-

[14] *Watervale, etc., Co.* vs. *Leach*, 33 Pac., 418; *Van Zant* vs. *Argentine M., etc., Co.*, 8 Fed., 727, 2 McCrary, 159; *Wilhelm* vs. *Silvester*, 101 Calif., 358; *Atkens* vs. *Hendree*, 1 Idaho, 95; *Pardee* vs. *Murray*, 4 Mont., 234, 2 Pac., 16.

tion of veins in such situations came prominently before the courts on account of the discovery of the great ore deposits of Leadville, Colo. Here silver ore was found in connection with iron-impregnated strata which were frequently horizontal or very

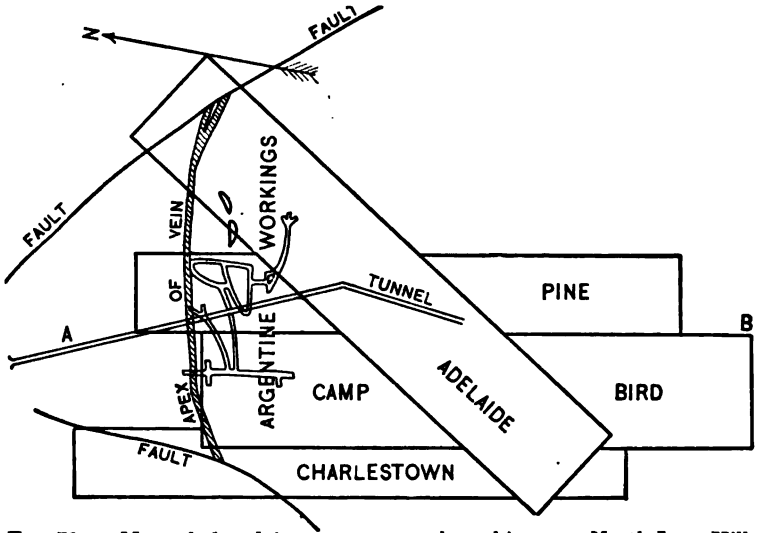


FIG. 79. — Map of the claims, outcrop and workings on North Iron Hill, Leadville, Colo.

From Monograph, xii, U. S. G. S.

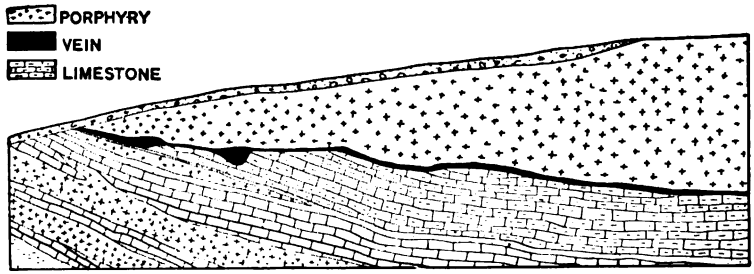


FIG. 80. — Section along the line *A–B* of Fig. 79 showing nearly horizontal vein.

From Monograph xii, U. S. G. S.

nearly horizontal in direction. The position of the ore deposits in this district is illustrated in Figs. 79 and 80, taken from Emmons' great Monograph on Leadville and its ore deposits.[14d] The first shows the claims and the outcrop of the deposit or vein on

[14d] Monog. xii, Geology and Mining Industry of Leadville, Colo., S. F. Emmons (U. S. Geol. Surv.).

North Iron Hill. The second is a geologic section of the formations beneath the surface along the line A—B, which is the common boundary between the Camp Bird and Pine. As this shows, the vein, which is a stratum of limestone partially replaced by iron and impregnated in places with silver and lead ore, is almost horizontal. There were many other similar veins or deposits in the district; and some of these were, at places, horizontal.

There was a very strong local feeling in the district against allowing extralateral rights to the fortunate claims which were located on the outcrop of the vein. It was contended by the miners that these deposits were not included in the veins or lodes granted extralateral rights by the statute. It is stated that this feeling was so strong that it was impossible for the owners of the apexes of these deposits to gain their rights in the courts by

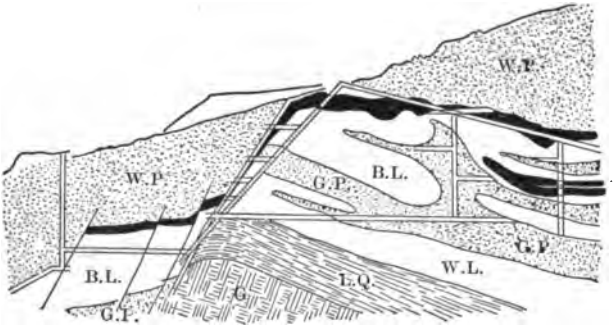


FIG. 80*a*. — Horizontal deposits. Vertical E. and W. section through McKean shaft, Iron Hill, Leadville, Colo.
From Genesis of Ore Deposits, *Pošepný et al.*

means of a jury trial. For, although the law might be correctly stated in the instructions, the jury would nevertheless decide that the ore-body in dispute in the particular case was not a vein or lode, and consequently deprive it of extralateral rights. At first, the lower courts took the position that, if the vein was exactly horizontal, no extralateral rights would accrue to such vein, but that it must be governed by the provisions relating to placer claims. The court says, in the case of *Stevens* vs. *Williams*, 1 McCrary, 480 Fed. Cas., 13,413: "If there is any departure from a horizontal position it is sufficient" [to give extralateral rights.] Again, in *Leadville Co.* vs. *Fitzgerald*, 4 Morr. Min. Rep., 38, Fed. Cas., 8158, the same court says: "It is conceded that if the vein

be exactly upon the plane of the horizon it is not within the Act."

But when the final authority, the United States Supreme Court, came to pass upon this question which arose in the case of *Iron-Silver, etc., Co.* vs. *Mike & Starr Co.*, 143 U. S., 394, they took the opposite view, saying:

"and as to the other matter, that the title to portions of this horizontal vein or deposit, 'blanket' vein as it is generally called, may be acquired under the sections concerning veins, lodes, etc. The fact that so many patents have been obtained under these sections, and that so many applications for patents are still pending, is a strong reason against a new and contrary ruling."

And this is now the law with regard to horizontal veins.[15]

Rule. — **Flatness or absence of dip in any vein does not affect the extralateral rights belonging to the same. Extralateral rights accrue to a horizontal or approximately horizontal and to a bedded or blanket vein as well as to veins having larger dip angles.**

Vein can be Followed Extralaterally only on Vein Itself

If a claim contains a vein which on its dip passes under adjoining properties, the owner of such claim can only follow his vein outside his own territory on the vein itself, and cannot reach it by any other kind of workings in the space beneath the adjoining properties. This precise question first came before a court in *St. Louis, etc., Co.* vs. *Montana, etc., Co.*, 113 Fed., 900, and we cannot state the law better than in the clear and concise language of the decision itself:

"The case involves the interesting question whether the owner of a mining claim who has the right to pursue beyond the side lines of his claim a vein or lode which has its apex within his own claim is confined in his right to operations within or upon the vein itself and is without authority to otherwise enter the adjoining claim . . . the owners of the extralateral rights are given the right to follow outside of their side lines and into adjoining claims all veins or lodes which have their apices in their own claims, so as to confer extralateral rights. This is their right, and no more. There is no warrant for saying that they have any general right of exploration within land of an adjoining patented claim whether upon or below the surface. The right of exploration is given for the purpose of making discovery of mineral. Of

[15] *Tombstone, etc., Co.* vs. *Way Up Min. Co.*, 1 Ariz., 426, 25 Pac., 794; *Gilpin* vs. *Sierra, etc., Co.*, 2 Idaho, 662, 23 Pac., 547; *Leadville Co.* vs. *Fitzgerald*, Fed. Cas., No. 8158.

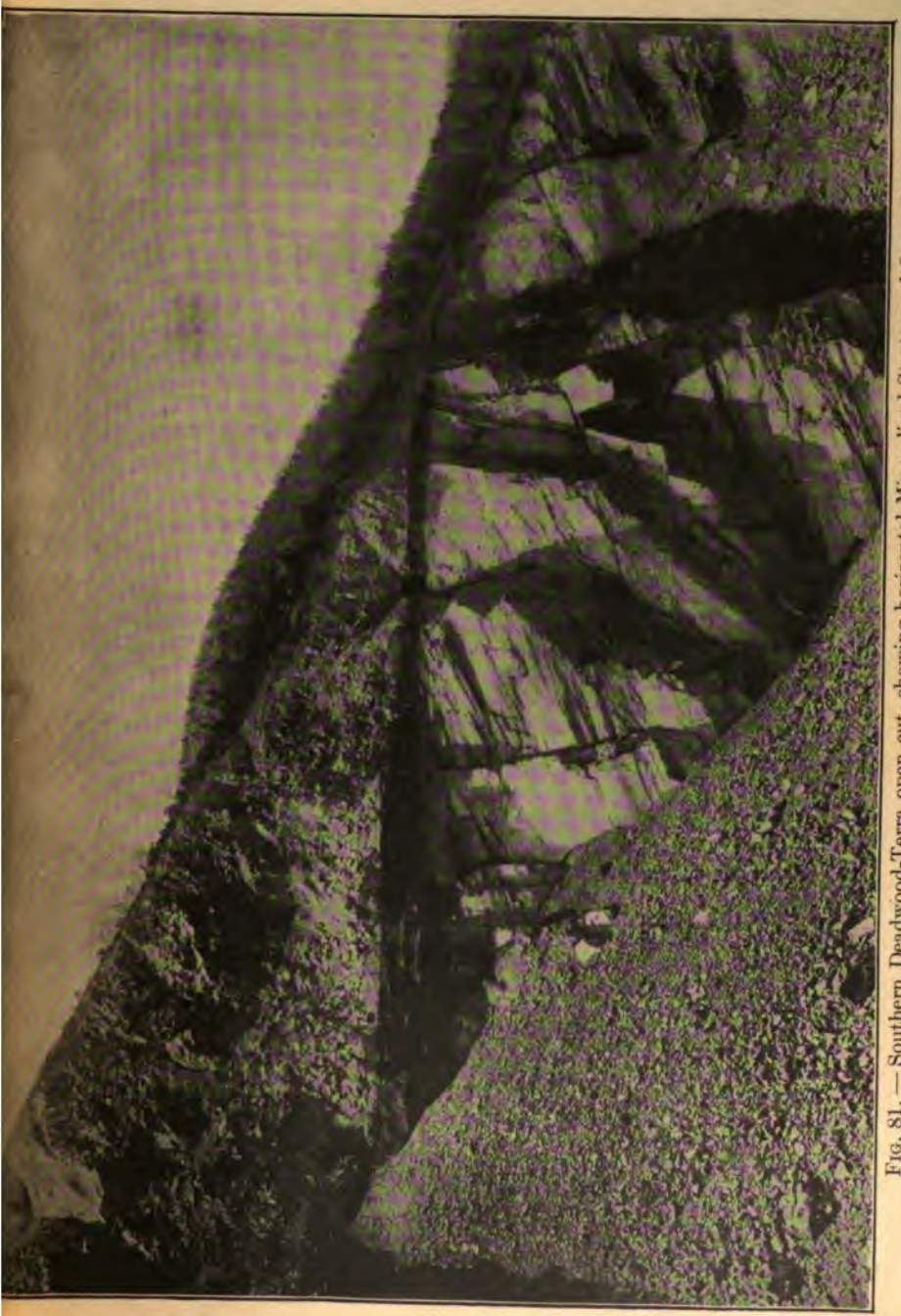


FIG. 81. — Southern Deadwood-Terra open cut, showing horizontal Mineralized Stratum of Quartzite.
From professional paper No. 26, U. S. G. S.

what avail would be the right of exploration if no benefit could be obtained from discovery made thereby? The ground covered by a subsisting, valid mineral location is open to exploration only by the owner thereof. The statute gives the appellants the right to follow the vein which they were seeking to reach by the tunnel, but it confers upon them no right to approach it from any point other than from the vein or lode itself."

To the same effect are the other cases in which this question has arisen.[16]

The same question came before the United States Supreme Court in *St. Louis, etc., Co.* vs. *Montana, etc., Co.*, 194 U. S., 235. Fig. 71 shows the claims. A lower United States court had granted an injunction restraining the owners of the St. Louis claim from excavating a tunnel beneath the surface of the Nine Hour claim to reach a vein which apexed in the St. Louis claim, but passed on its dip under the Nine Hour claim. This injunction was sustained on appeal to the Supreme Court on the ground that the patent conveyed *exclusive* right to the subsurface as well as to the surface, subject only to the right of an adjacent owner to pursue and develop a vein descending on its dip into the subsurface of an adjoining claim.

Rule. — **A vein which passes beyond the legal side lines of the claim in which it apexes can be followed extralaterally only by workings on the vein itself. It cannot be developed by cross-cuts, tunnels, or other excavations penetrating the earth beneath the surface of another claim elsewhere than upon the extralateral portions of such vein.**

Intervening Prior Dip Rights

The claim owner has the right to follow his vein extralaterally on the vein itself to any distance. Suppose, however, that in the working of his vein he comes to a place where a prior right of some other claim bars his right to work his vein, for the width of the prior cross-claim. What happens? Does such barring of his right by the prior cross-claim extinguish all his rights to pursue and work his claim within the planes crossing through his parallal side lines, or can he pass beyond the portion of the vein covered by prior rights and again proceed to work his vein in its onward course? This instance first came before a court in the case of *Empire*,

[16] *Parrot Co.* vs. *Heinze*, 64 Pac., 326, 53 L. R. A., 491; *State* vs. *District Court, etc.*, 65 Pac., 1020; *Doe* vs. *Waterloo Min. Co.*, 54 Fed., 935; *Consolidated Wy. G. M. Co.* vs. *Champion Min. Co.*, 54 Fed., 935, and 63 Fed., 540.

etc., Co. vs. *Bunker Hill, etc., Co.*, 121 Fed., 973. The situation and names of the different claims involved are shown in Fig. 82.

The Last Chance and the Emma claims were prior, and the vertical planes 2—1—5 and 3—4—6 bounding the extralateral rights of the Last Chance cut out a strip through extralateral rights of the Stemwinder which existed between vertical planes through *b—a—e—f* and *d—c—g—h*. The court says:

"A new and important question, however, arises in the present case from the fact that the extralateral right claimed by the appellee is cut in twain by those of the Emma and Last Chance claims, and that thereby that part of the lode which is in controversy in the present suit is detached from that part which apexes within the appellee's claim. It is contended by the appellant that by the intervention of the extralateral rights belonging to the

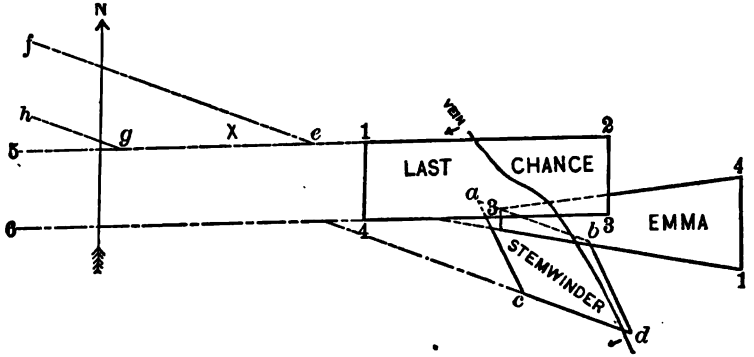


FIG. 82. — Diagram of claims, vein and extralateral rights in *Empire, etc., Co.* vs. *Bunker Hill, etc., Co.*, 121 Fed., 973, from the decision.

Emma and Last Chance claims the extralateral right of the appellee is cut off, and the appellant asserts the right to mine the ledge in question by reason of other claims located to the northwestward of the Last Chance, but subsequent in time to the Stemwinder location. We know of no case in which this precise question has been presented. In *Empire State-Idaho Mining & Developing Co.* vs. *Bunker Hill and Sullivan Min. Co.*, 52 C. C. A., 219, 114 Fed., 417, this court recognized the extralateral right of the San Carlos claim beyond the point where the prior extralateral right of the Viola claim ended, but in that case the Viola extralateral right did not wholly intervene at any point to cut off the ore-body to which the San Carlos had the extralateral right; in other words, there was in that claim upon the outcrop of the ledge in the surface location a point from which the owners of the San Carlos could, without interruption and continuously, proceed on the ledge on its downward course to the full extent of the extralateral right awarded by the court. By section 2336 of the Revised Statutes (U. S. Comp. St., 1901, p. 1436) it is provided that where two or more veins intersect or cross each other the prior locator shall be entitled to all the mineral contained within the space of

intersection, and that the subsequent locator shall have the right of way through the space of intersection for the purpose of the convenient working of his mine. The case so provided for by statute is not the precise case of two conflicting extralateral rights upon the same ledge, which is here presented, but in principle it is the same. If the vein upon which the Stemwinder is located were in fact a separate vein from that on which the Last Chance is located, but passed through the latter in the same direction in which extralateral rights are claimed in the present suit, there could be no doubt of the right of the owner of the Stemwinder to pursue the vein beyond the point of intersection, and to maintain right of way through the vein of the Last Chance at the point of intersection. We see no reason why that right, which is so recognized by the statute, and which would probably be recognized in the absence of a statute, shall be denied when the point of intersection of extralateral rights is not upon separate veins, but upon the same vein. If this conclusion is correct, it follows, we think, that the possession of the ore-body at the surface carries with it the possession of all that belongs to the location."

The question has not yet been before the United States Supreme Court; but the above decision is sound in principle, and there is no reason to believe that it will ever be reversed by the Supreme court.[17]

Rule. — **Where a junior claim's extralateral rights are cut in two by an intervening prior right on the dip of the same vein, the extralateral rights of the junior claim are not lost in the dip of the vein beyond the part belonging to the senior location, but such severed portion of the dip belongs to the junior claim, and its owner has a right of way through the space of intersection of the two rights on the dip for the purpose of reaching and working such severed portion of his vein.**

End Lines Moved by Agreement of the Parties

Although, as we have seen, it is one of the fundamental principles of the mining law that, in order to have extralateral rights, the end lines of the claim must be parallel, an exception may be created to this otherwise invariable rule by the acts of the parties themselves. Parties owning adjacent claims may by agreement make a new end line or end lines between their claims which may not be parallel with the other end lines of the respective claims. In such a case extralateral rights are not forfeited, although such moved end lines absolutely terminate the right to mine by the respective claim owners by vertical planes passing

[17] *Mont. Mining Co.* vs. *St. Louis M. & M. Co.*, 102 Fed., 430.

through such readjusted end line. But otherwise extralateral rights are not interfered with.[18]

The leading case on this situation is the *Richmond, etc., Co.* vs. *Eureka, etc., Co.*, 103 U. S., 839, which involved the same

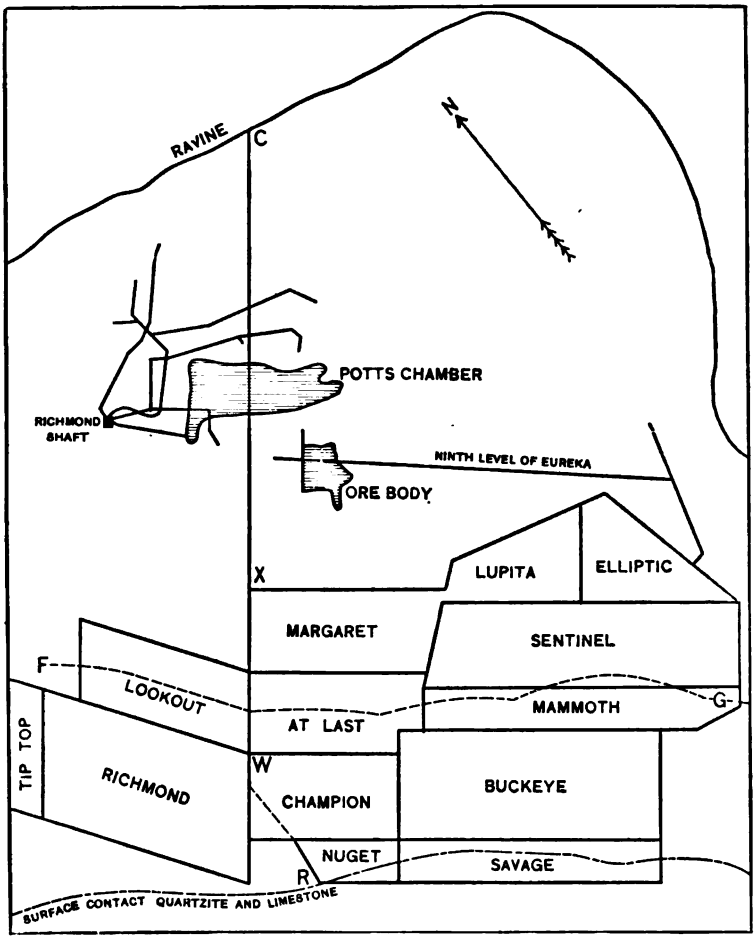


FIG. 83. — Map of claims, etc., in *Richmond, etc., Co.* vs. *Eureka, etc., Co.* from the decision.

properties as the famous Eureka case we have already cited under the definition of a vein. The situation of the claims is shown in Fig. 83. As a compromise of disputes and threatened litigation,

[18] *Bunker Hill, etc., Co.* vs. *Empire State, etc., Co.*, 108 Fed., 189, 109 Fed., 538; *Empire State, etc., Co.* vs. *Bunker Hill, etc., Co.*, 114 Fed., 417, 121 Fed., 973.

mutual conveyances had been exchanged between the parties fixing the line C—X—W as a compromise boundary between the contesting claims. The dispute arose over the ownership of the ore in the Potts Chamber found on the vein on its dip; and the court decided that this compromise line extends on the extralateral rights on the dip as well as directly beneath the surface, and that, as the vertical plane through this compromise line bisected the Potts Chamber, the ore on the one side belonged to the one party and that on the other side belonged to the other party.[19]

The same question was again before the United States Supreme Court in the case of *Kennedy, etc., Co.* vs. *Argonaut, etc., Co.*, 189 U. S. 1. The situation of the properties is shown in Fig. 84.

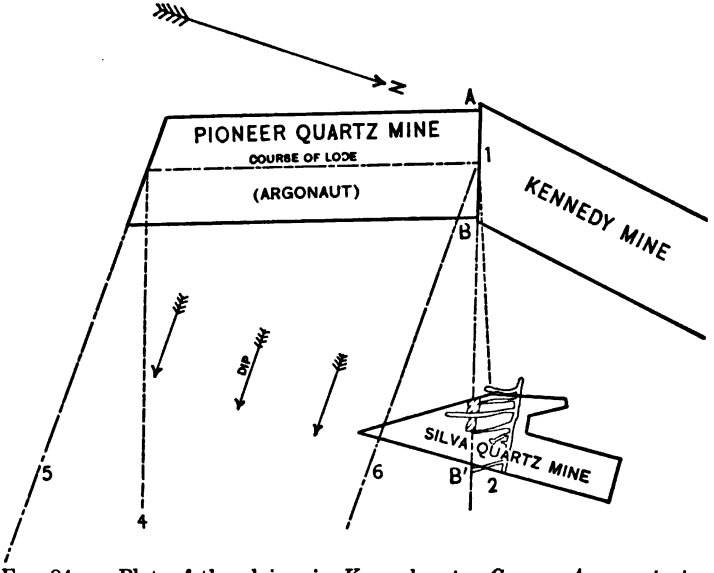


FIG. 84. — Plat of the claims in *Kennedy, etc., Co.* vs. *Argonaut, etc., Co.*, 189 U. S. 1, from the decision.

By compromise of a contest in the Land Office the line A—B was agreed upon as the boundary between the Pioneer and the Kennedy and patents issued accordingly. The ore in dispute was taken from underneath the Silva Claim (which also belonged to the Kennedy Co.), but was found in a vein which apexed in both the Pioneer and the Kennedy. The Supreme Court decided

[19] *Eureka, etc., Co.* vs. *Richmond, etc., Co.*, 4 Sawyer, 302; *McGee* vs. *Stone*, 9 Calif., 600.

that the extralateral rights of the Pioneer were bounded by the extension A—B—B′ of the compromise line A—B, although this line was not parallel with the other end line of the Pioneer claim.

Rule. — **Where end lines between adjoining claims are moved by agreement of the respective parties, and patents issued for the claims as readjusted, such readjusted end lines determine the extralateral rights of the respective claims by a vertical plane through the same extended in the direction of the dip of the vein, even though such readjustment of the end lines leaves the end lines of one or both of the claims non-parallel.**

Conflict between Mining Claim and Agricultural Patent

Naturally, nearly all cases of conflicting rights to ore-bodies, arising under the extralateral provision of the statute, originate in disputes between the owners of different mining claims. But if a mining claim which has extralateral rights under the statute is so situated that the vein apexing therein extends into land held by an agricultural patent, what is the result of the conflicting rights between the miner and the farmer? This case has actually occurred; and the law thereon and the reasons therefor are so clearly stated in the decision of the case that I quote in full the part of the decision relating to this question:[20]

"The only question is whether, under the Revised Statutes, a party discovering and acquiring title by patent from the United States to a mineral gold-bearing vein or lode having its apex within the land purchased is entitled to follow the vein or lode down on its dip, across the boundaries of his own lands into the agricultural lands of an adjoining proprietor, who has the older title? In my judgment he, clearly, has not. The equitable title to the agricultural lands, held by plaintiff, fully vested on the entry and payment by Hammack on June 15, 1874. After that the United States merely held the dry legal title in trust for the purchaser without any pecuniary or beneficial interest in it. From the moment of the entry, payment, and issue of the certificate of purchase, these lands cease to be public, and became private property, *Milling Co.* vs. *Spargo*, and *Same* vs. *Fick*, 8 Sawy, 647, 16 Fed. Rep., 348, and cases cited. Also *Wirth* vs. *Branson*, 98 U. S., 118; *Deffeback* vs. *Hawke*, 115 U. S., 405, 6 Sup. Ct. Rep., 95. By the entry and payment by Hammack, there being no known mine on the land, the entire interest to the center of the earth vested in him, and there was nothing left in the United States for a subsequent grant to other parties to operate upon. The only exceptions in the patent relate to easements and other prior rights already

[20] *Amador, etc., Co.* vs. *South Spring, etc., Co.*, 36 Fed., 668; 13 Saw., 523.

vested in other parties, before the date of the entry, as was held in the case of *Milling Co.* vs. *Spargo*, cited. No other exceptions are authorized by the statute to be inserted, and exceptions not so authorized, if inserted, would be void. *Cowell* vs. *Lammers*, 10 Sawy, 254, 21 Fed. Rep., 200; *Deffeback* vs. *Hawke*, 115 U. S., 402, 406, 6 Sup. Ct. Rep., 95. Section 2322, Revised Statutes, relied on by defendant, does not authorize any such exception, and it only applies, at most, to public lands, and to rights acquired to such lands before other parties acquire interest therein. It, certainly, does not apply to agricultural lands disposed of years — perhaps half a century — before by the Government and before any easement, or other right, has become vested in other parties. The United States can undoubtedly grant easements, and other limited rights, in any portion of the public lands, and subsequent purchasers must take them burdened with such easements or other rights; but when it has once disposed of its entire estate in the lands to one party, it can, afterwards, no more burden it with other rights than any other proprietor of lands."

This same case came before the United States Supreme Court, 145 U. S., 300, but the South Spring Hill Company had, pending the litigation, become owners of both properties. However, there were minority stockholders of Amador Company who might possibly be interested in having the question determined, but they did not appear; consequently the Supreme Court reversed the judgment of the lower court to save any possible rights of such minority stockholders, expressly stating that this was done "without considering and passing on the merits of the case in any respect"; so that the decision, through that of a lower United States court, still stands and is the authority on the subject. Being based on sound reasoning it is not likely to be disturbed in the future.

Rule. — **In case a vein passes on its dip out of a mining location into the land of an agricultural patent, it has no extralateral rights in the agricultural land, and the miner can only follow his vein to the vertical plane through boundary of the agricultural patent.**

No Extralateral Rights for Veins Found in Agricultural Land or Placer Locations

When the patent has been issued for agricultural land it carries with it the right to all mines and minerals beneath the surface to which no adverse right has attached at the time of issuing the certificate of purchase or patent.[21]

[21] *Colorado, etc., Min. Co.* vs. *Turck*, 50 Fed., 888; *Milling Co.* vs. *Spargo*, 16 Fed., 348; *Amodar Medean G. M. Co.* vs. *South Spring Hill G. M. Co.*, 36 Fed., 668.

Where a vein is discovered in a placer location after a patent is obtained, or where discovered in land held under an agricultural patent, such vein or lode does not carry the right of extralateral pursuit of the same by reason of the nature of the grant, which is only of what is contained within vertical planes through the surface boundaries.[22]

Extralateral Rights of Secondary Vein which is Parallel to Legal End Lines

The rights accruing to a secondary vein which crosses a claim parallel to the legal end lines is a puzzling question. In Fig. 85 G—H is a secondary vein and parallel to the end lines.

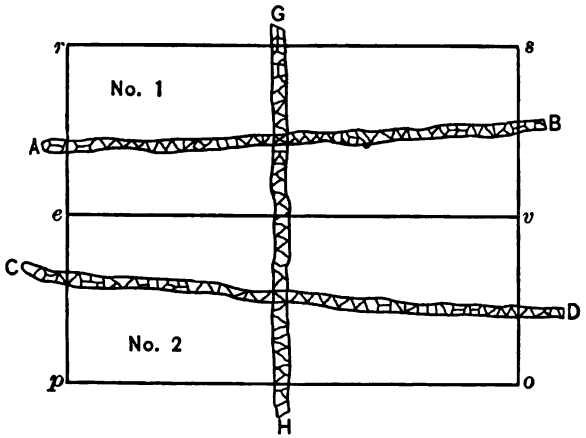


Fig. 85. — Diagram of assumed case.

The end lines for the secondary vein are the end lines, *s*—*v*—*o* and *r*—*e*—*p* of the known veins. The question is, how far can the owners of claim No. 1 and claim No. 2 each go in working the secondary vein G—H? The legal end lines for the claims do not furnish any limitation; for they do not intersect the secondary vein, nor would lines parallel thereto at any point within the claim do so. The side lines of the claim do not become end lines for the cross veins, but are also side lines for secondary veins within the claims, just as the legal end lines are also end lines for all veins within the claims.[23]

Can such a cross vein be pursued beyond the side lines of the

[22] Lindley on Mines, 2d ed., sec. 413.

[23] See p. 220 *et sq.*

claim? If so, such rights would be indefinite in extent, as such a cross vein would never intersect the end lines of the claim or any lines parallel thereto. Clearly this cannot be the law; and I think the only way out of the dilemma is to say that the miner cannot go beyond vertical planes through his boundaries on such a cross vein.

This question is discussed in Lindley on Mines, sec. 594, who concludes:

> "it is impossible to conceive upon what principle any extralateral right could be granted on the cross or secondary vein, without establishing two sets of end-line planes, which, as we have heretofore seen, is not permissible."

XV

Tunnels and rights to veins; area in which locations may be made on veins discovered in tunnel; overlapping claims; prima facie common-law rights to all mineral beneath surface.

Tunnels and Rights to Veins

THERE is one important exception to the general rule that all the mineral found within the boundary of a claim belongs to the owner of such claim, except that in the dips of veins which apex in some other claim. This exception arises from the rights given by statute to tunnels. By section 4 of the Act of 1872, Revised Statutes, sec. 2323, the following provisions are made:

> "Where a tunnel is run for the development of a vein or lode, or for the discovery of mines, the owners of such tunnel shall have the right of possession of all veins, or lodes within 3000 feet from the face of such tunnel on the line thereof, not previously known to exist, discovered in such tunnel, to the same extent as if discovered from the surface; and the locations on the line of such tunnel of veins, or lodes, not appearing on the surface, made by other parties after the commencement of the tunnel, and while the same is being prosecuted with reasonable diligence, shall be invalid; but a failure to prosecute the work on the tunnel for six months shall be considered as an abandonment of the right to all undiscovered veins on the line of the tunnel."

Under this provision considerable litigation has already arisen, and although a number of resulting questions have been passed upon by the Supreme Court there still remain some which have not, and these must be regarded as not definitely settled.

When a vein is discovered in a tunnel claim it has the same extralateral and other rights as a vein located from the surface. Under this section of the statute there has been much doubt as to the rights conferred when these are considered in connection with the other sections of the mining law, and on account of such doubtful points considerable litigation has occurred by which most of the uncertainties have been cleared up.

The fundamental point in this class of locations is that tunnels

only give rights where three conditions coexist: (1) *Blind lodes, that is, such lodes as do not reach the surface, and are not within boundaries of a location made previous to the tunnel location,* (2) *Such blind veins must not be known to exist at the time the tunnel was started.* (3) *Such blind veins must be discovered or intersected by the tunnel within* 3000 *ft. from the face on the line thereof while the same is being prosecuted with reasonable diligence.*

But a number of other exceedingly important questions were left open to doubt by the statute; *e.g.*, (1) Extent of claim and how located on the vein discovered in the tunnel? (2) How should a tunnel location be marked and recorded? (3) How are claims on veins discovered in the tunnel marked on the surface?

On the first question, as to the extent of the claim and how located, the first decision was by a Colorado court, to the effect that, in the absence of regulation by local statutes, only the actual diameter of the tunnel passed.[1]

This question, however, has been settled by the Supreme Court in the case of *Enterprise, etc., Co.* vs. *Rico, etc., Co.* 167 U. S., 108, in which the court decides that the above section of the statute gives the owner of the tunnel all blind veins discovered in the tunnel, if the same are not contained within the boundaries of a claim located prior to the commencement of the tunnel, to the extent of 1500 ft. taken in whatever direction the owner of the tunnel may wish, so that the area in which veins may be held by tunnel rights as against subsequent surface locators is 3000 ft. in length and 1500 ft. on each side of the line of the tunnel.[2]

The situation of the claims in this case is shown in Fig. 86. The Group tunnel was located first, July 25, 1887, the Vestal lode mining claim was based on a discovery made March 23, 1888, and located April 1, 1888. The Vestal owners applied for a patent in 1890. No adverse proceedings were instituted by the tunnel owners, and a patent issued to the Vestal owners for their ground Feb. 6, 1892. On June 25, 1892, a vein was discovered in the Group tunnel 1920 ft. from the portal, at point marked "Discovery." The tunnel owners immediately caused the Jumbo No. 2 location to be marked on the surface and the certificate

[1] *Corning Tunnel, etc., Co.* vs. *Pell*, 4 Colo., 507; *Rico, etc., Co.* vs. *Enterprise, etc., Co.*, 53 Fed., 321.

[2] *Ellet* vs. *Campbell*, 18 Colo., 510; *Enterprise, etc., Co.* vs. *Rico, etc., Co.*, 66 Fed., 200; *Hope Min. Co.* vs. *Brown*, 7 Mont., 550.

was duly recorded, claiming 54 ft. northeasterly and 1446 ft. northwesterly.

The court says:

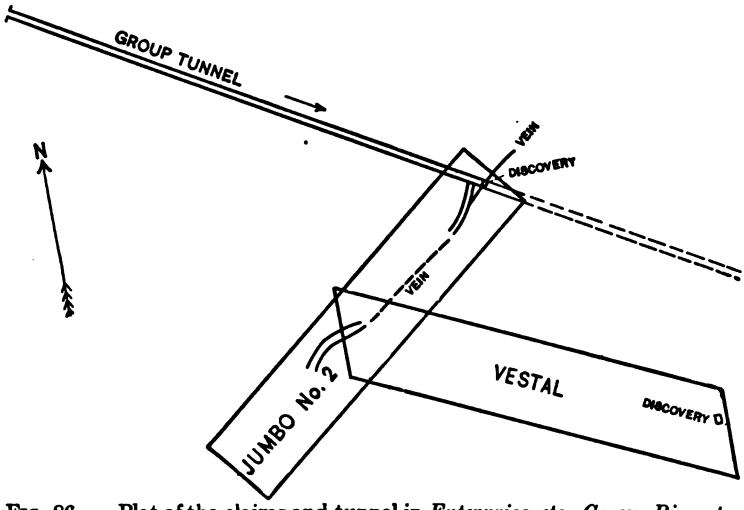


FIG. 86. — Plat of the claims and tunnel in *Enterprise, etc., Co.* vs. *Rico, etc., Co.*, from the decision.

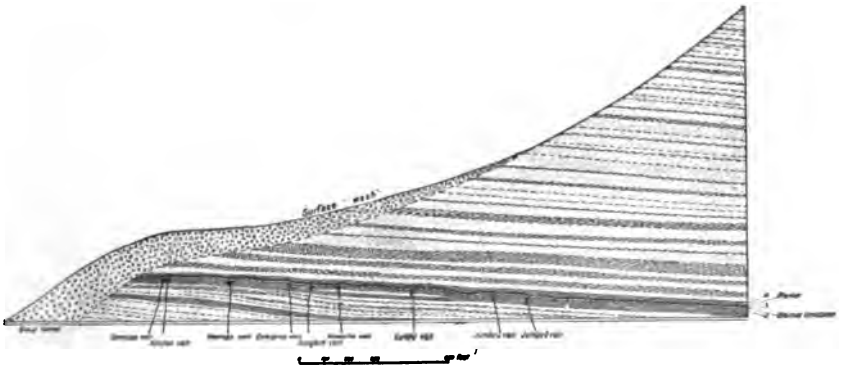


FIG. 87. — Diagrammatic longitudinal section through Group tunnel, Enterprise mine.

From pt II, 22d Ann., U. S. G. S.

"The right to this vein discovered in the tunnel is by the statute declared to be 'to the same extent as if discovered from the surface.' If discovered from the surface, the discoverer might, under Revised Statutes, sec. 2320, claim 'one thousand five hundred feet in length along the vein or lode.' The clear import of the language then is to give to the tunnel owner, discovering a vein

in the tunnel, a right to appropriate fifteen hundred feet in length of that vein. When must he indicate the particular fifteen hundred feet which he desires to claim? Counsel for plaintiffs contend that it should be done when in the first instance the tunnel is located, and that if no specification is then made the line of the tunnel is to be taken as dividing the extent of the claim to the vein, so that the tunnel owner would be entitled to only 750 feet on either side of the tunnel; while counsel for defendant insist that he need not do so until the actual discovery of the vein in the tunnel. We think the defendant's counsel are right. In order to make a location there must be a discovery; at least, that is the general rule laid down in the statute. Section 2320 provides: 'But no location of a mining claim shall be made until the discovery of the vein or lode within the limits of the claim located.' The discovery in the tunnel is like a discovery on the surface. Until one is made there is no right to locate a claim in respect to the vein, and the time to determine where and how it shall be located arises only upon the discovery — whether such discovery be made on the surface or in the tunnel. . . . It may be true, as counsel claim, that this construction of the statute gives the tunnel excavator some advantages. Surely it is not strange that Congress deemed it wise to offer some inducements for running a tunnel into the side of a mountain. . . .

"We hold, therefore, that the right to a vein discovered in the tunnel dates by relation back to the time of the location of the tunnel site, and also that the right of locating the claim to the vein arises upon its discovery in the tunnel, and may be exercised by locating that claim the full length of 1500 feet on either side of the tunnel, or in such proportion thereof on either side as the locator may desire."

Consequently, the practical effect of a tunnel location is to withdraw from location by other parties all blind veins or ledges which may be crossed by the line of such tunnel within a rectangle 3000 feet on each side, and possibly additional areas at each end as explained below.

There is no requirement in the United States statutes as to the manner of locating or marking and recording a tunnel claim. If there are State or district rules on the subject these must be obeyed. In the absence of such rules,

"The general custom, which is almost universal, governing their location must prevail. This, briefly stated, is similar in all respects to the acts required to locate a lode or vein, namely, the posting of a notice on the claim and recording a copy thereof where recording is made necessary. This notice should contain a description of the face or mouth of the tunnel with reference to some natural object or permanent monument, together with a general description of the course of the proposed tunnel and the purpose for which it is located."[3]

[3] Snyder on Mines, sec. 205; Circular of Land Office, Dec. 18, 1903, par. 16, p. 28. See also the Land Office Rules and Regulations as to tunnels in Appendix.

In nearly all the mining States, on account of the fact that no provisions were made by Congress, statutes have been passed on the subjects of marking location, recording, etc., of mining claims. These statutes should be carefully observed within their respective jurisdictions. When such statutes attempt, however, as some of them do, to fix the size of a tunnel claim, they are probably void, being in conflict with the United States law on this point.[4]

The question as to the size of a tunnel location, or the area that may be claimed in a tunnel location notice, is one as to which there is still confusion and a difference of opinion among mining lawyers. Sections 16, 17 and 18 of the Land Office Regulations[4a] in regard to tunnel locations seem to partially conflict with the decisions of the Supreme Court in the case of *Enterprise, etc., Co.* vs. *Rico, etc., Co.* quoted above. The regulations state "The effect of section 2323 Revised Statutes is . . . to prohibit other parties, after the commencement of the tunnel, from prospecting for and making locations of lodes on the *line thereof*[4b] and within said distance of three thousand feet . . . " But the Supreme Court, in the above case, expressly held that the tunnel owners could take a vein to the length of 1500 feet (located as they pleased with reference to amount on either side of the tunnel), even though such vein extended under the Vestal mining claim which was not located on or near the *line* of such tunnel. Section 17 of said regulations prescribes the notice to be posted at the face of the tunnel, and then proceeds to require that the tunnel locator "in order that miners or prospectors may be enabled to determine whether or not they are within the lines of the tunnel, establish the boundary lines thereof, by stokes or monuments placed along such lines at proper intervals to the terminus of the three thousand feet from the face." What *lines* and where located? Are the lines meant those vertically above each side of the bore of tunnel? If not, what is their location with reference to the tunnel? The Regulations apparently evade these all-important questions, perhaps on account of the indefiniteness of said section 2323.

Under the decisions of the Supreme Court there can be no doubt that the tunnel locator has the right to claim 1500 ft. of any previously undiscovered blind vein that is intersected by

[4] Snyder on Mines, sec. 296.

[4a] Given in Appendix.

[4b] Italics as in the official copy of the Rules and Regulations.

the line of the tunnel, though he cannot claim 1500 ft. in both directions on any one vein. If, however, the tunnel locator should mark out the boundaries of his location only 750 ft. on each side of the line of his tunnel, he would be limited in his claim on any blind vein discovered therein to 750 ft. on each side of the tunnel. If it is desired to avoid being limited thus, probably the safest plan in laying out tunnel locations, in view of the confused and evasive Land Office Rules and Regulations, is to mark out the line and width of the projected tunnel bore and also the sides of a parallelogram 3000 ft. long and 1500 ft. on each side of the line of the tunnel, making the proper statement as to width claimed on each side of tunnel in the location notice.[4c]

The only thing that ought to be necessary in relation to a tunnel location should be to erect a proper monument, with notice thereon, at the place of commencement of the tunnel, and then establish the proposed direction and length of the tunnel by proper monuments along the center line thereof. This would give other prospectors all necessary information as to the area within which they would prospect, after the location of the tunnel, at their peril of having any blind vein in their claim afterward taken from them by being discovered in the tunnel.

A location 3000 ft. square will not comprise all the veins to which the tunnel constructor has a right, under the above quoted decision of the Supreme Court, as will be readily apparent by an inspection of the subjoined diagram (Fig. 88). As the diagram further shows, it is also possible for a location only 750 ft. on each side of the vein to contain more of a blind vein than the tunnel owner is allowed to locate. The extreme possibilities of a tunnel locator's rights, under the decisions, would be comprised within a parallelogram 3000 ft. on each side and, in addition, semicircular areas at both ends of such parallelogram whose radii are 1500 ft., provided always that the vein is intersected by the tunnel within 3000 ft. of the face thereof.

On the other hand, the rights of the tunnel maker on veins

[4c] "Logically, the marking of a tunnel location should be effected by marking the exterior boundaries of the parallelogram, within the area of which prospecting is not permitted or, rather, permitted at the peril of the prospector. As a matter of caution, the line and width of the projected tunnel bore, as well as the exterior boundaries of the parallelogram, should be marked at the surface." Lindley on Mines, 2d edition, sec. 475. But if the end lines (those crossing the line of the tunnel) should be marked out, it would probably estop the tunnel owner from claiming some veins that the Supreme Court's decision gives him a right to, even if the side lines are placed 1500 ft. from the line of the tunnel, as will be explained farther on.

intersected at acute angles might terminate much short of such boundaries. Consequently it is submitted that the only logical procedure, in the absence of any statutory requirements otherwise, is to mark the point of commencement and the proposed line of the tunnel by proper monuments, as suggested above, and not attempt any marking of exterior boundaries, for these do not have any fixed or definite relations to rights on veins

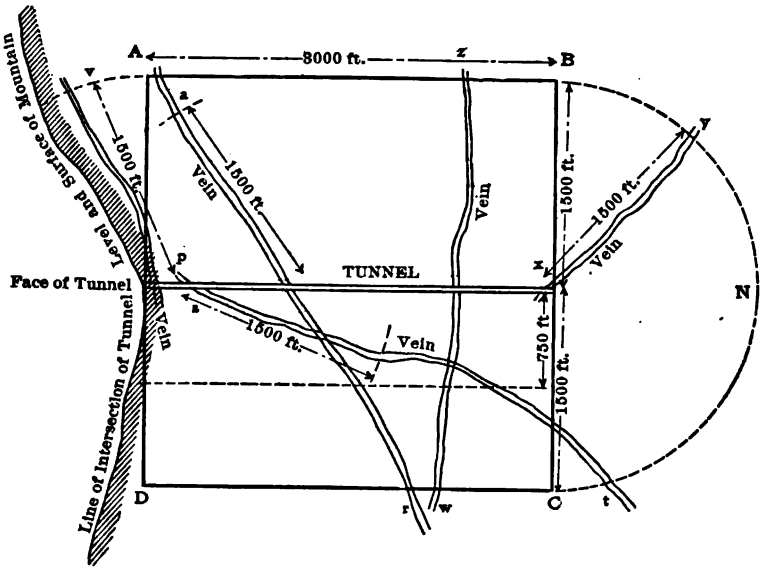


FIG. 88. — Hypothetical tunnel location. On the vein z–w at right angles to the tunnel, a claim can be located extending either to the line *A–B* or to the line *D–C*. But, under the decisions of the Supreme Court, the tunnel constructor would have rights also to 1500 ft. on veins crossing the tunnel at acute angles. His rights on such veins as v–p or x–y would, therefore, extend outside of the parallelogram *A-B-C-D*, even though each side of this is 3000 ft.; while as to the veins a–r and s–t, the tunnel rights would terminate considerably within such boundaries. In the case of the vein s–t the tunnel rights would terminate short of a line 750 ft. from the tunnel.

discovered in the tunnel unless it might be to narrow the tunnel locator's rights to less than 1500 ft. on an intersected vein in case such exterior boundaries are placed less than 1500 ft. from the line of the tunnel.

Whether it would be advisable, however, to attempt to make a tunnel location by such marking only in the present muddled condition of the Land Office Rules referring to tunnels, is doubt-

ful. If it is desired to save all rights to all possible veins it would perhaps be well to mark the line of the tunnel and also the *side lines* of the exterior boundaries at such distance, not exceeding 1500 ft. from the line of the tunnel, as may be desired and parallel therewith, and in the location notice claim the right *to locate 1500 ft. length of vein in any direction from the intersection of the tunnel and any vein discovered therein* or *any part of said length of vein on one side and the remainder thereof on the other side of such intersection.* The establishment of such side lines parallel with the tunnel would not (if 1500 ft. therefrom) narrow the tunnel rights any in those directions, and if no end lines were otherwise marked out there would be no estoppel to claim 1500 ft. or less in any direction on a vein intersected at an acute angle near either end of the tunnel, even though a part of the portion located of such vein extended beyond an imaginary end line.

In some of the early litigation under the tunnel provisions it was contended that the location of a claim made on a vein, discovered in a tunnel, must be marked on the surface in the same way that a location is marked on a vein that outcrops at the surface. However, this would be almost impossible, for, if the vein is discovered at some, perhaps a great, depth beneath the surface, it would be impossible without extensive exploration to mark out a location on the surface which would correctly include the vein, or the apex thereof, in the depths. This question has been before the Supreme Court in the case of *Ellet* vs. *Campbell*, 167 U. S., 116, in which it is decided that it is only necessary to post a notice of the location and extent of the claim at the mouth of the tunnel, and that it is not necessary to attempt any marking whatever of the claim on the surface.[5]

Rule. — **If a blind vein is discovered in a tunnel, the owner of the tunnel can claim 1500 ft. of such vein, located as he pleases with reference to the tunnel, provided that the intersection of the vein and tunnel is within such claim. Such claim need not be marked off on the surface above. It is only necessary to post at the mouth of the tunnel a notice as to the position and extent of the claim. There is no requirement in the United States Statutes regarding the marking of the original tunnel location itself on the surface; but the requirements of local statutes in this regard must**

[5] *Ellet* vs. *Campbell*, 18 Colo., 510, 33 Pac., 521.

be observed. A tunnel has no right of way through a claim located before such tunnel was begun, nor any rights to blind veins found in such prior claim.[6]

In some of the States provisions are made by statute for obtaining right of way for mining as well as other purposes by the exercise of the right of eminent domain. Whether under these provisions an exploratory tunnel could condemn a right of way through the subsurface of a senior mining claim does not appear to be a settled question; but the probabilities are that in the mining States that mining would be considered such a "public use" that it would be allowed.

The phrase "line of the tunnel" used in the statute has given rise to doubts as to its exact meaning. Although not explicitly defined by it, the Supreme Court seems to refer thereto as at least not wider than the bore of the tunnel.[7]

The phrase "face of the tunnel" used in the statute means the first working face of the tunnel, the place where it first enters cover and passes underneath the surface. It is from this point that the 3000 ft. in length that the tunnel digger is allowed, is to be measured.[8]

A tunnel is not a mining claim. It is only a means of exploration of the subsurface. The owner never receives a patent for it, and no discovery of mineral is essential to create a tunnel right or to maintain possession of it. The statute only calls for adverse proceedings where one mineral claimant contests the right of another mineral claimant. Therefore it is not necessary for the owner of a tunnel to institute adverse proceeding whenever a patent application is made for any ground in which he may possibly have rights to blind lodes or veins by discovering the same in his tunnel. His rights to any veins are preserved to him without adverse proceedings.[9]

Overlapping Claims

The subject of overlapping claims, the question when the lines of a junior claim may be laid over the lines of a senior claim in

[6] *Calhoun, etc., Co.* vs. *Ajax, etc., Co.*, 182 U. S., 499.

[7] *Enterprise, etc., Co.* vs. *Rico-Aspen, etc., Co.*, 167 U. S., 108; *Glacier, etc., Co.* vs. *Willis*, 127 U. S., 471.

[8] Land Office, General Circular Instructions, Dec. 18, 1903, sec. 16, p. 28; Copp, "Mineral Lands," pp. 35–36.

[9] *Creede, etc., M. Co.* vs. *Uintah, etc., M. Co.*, 196 U. S., 337.

order to secure extralateral rights by means of parallel end lines, is so closely connected with the apex law that it should be treated in connection therewith. It was first passed upon directly by the United States Supreme Court in *Del Monte Min. Co.* vs. *Last Chance Min. Co.*, 171 U. S., 55. The court states the question as follows:

"May any of the lines of a junior lode location be laid within, upon or across the surface of a valid senior location for the purpose of defining for or securing to such junior location underground or extralateral rights not in conflict with any rights of the senior location?"

After quoting the various statutes that may be regarded as having some bearing, the court continues (p. 74):

"The stress of the argument in favor of a negative answer to this question lies in the contention that by the terms of the statute exclusive possessory rights are granted to the locator. . . . We are not disposed to undervalue the force of this argument and yet are constrained to hold that it is not controlling. . . . It may be said that the statute gives to the first locator the right of exclusive possession; that in entry upon that territory with a view of making a subsequent location and marking on the ground its end and side lines is a trespass, and that to justify such an entry is to sanction a forcible trespass, and thus precipitate a breach of the peace. But no such conclusion necessarily follows. . . . If the end lines are not parallel, then, following their planes downward his rights will be either converging and diminishing or diverging and increasing the farther he descends into the earth. In view of this purpose and effect of the parallel end lines it matters not to the prior locator where the end lines of the junior location are laid. No matter where they may be they do not disturb in the slightest his surface or underground rights.

"For these reasons, therefore, we are of opinion that the first question [The one stated in the preceding citation from this same case] must be answered in the affirmative." [10]

However, such overlapping lines only give extralateral rights when the placing of such lines is not done against the consent of the owner or forcibly, surreptitiously, or otherwise fraudulently,[11] or provided no "forcible entry" is made.[12]

[10] *Bunker Hill, etc., Co.* vs. *Empire, etc., Co.*, 109 Fed., 538; *Davis* vs. *Shepherd*, 72 Pac., 57; 31 Colo., 141; *Tonopah, etc., Co.* vs. *Tonopah, etc., Co.*, 125 Fed., 400; *Empire, etc., Co.* vs. *Bunker Hill, etc., Co.*, 131 Fed., 591; *Crown, etc., Co.* vs. *Buck*, 97 Fed., 462; *Bunker Hill, etc., Co.* vs. *Empire, etc., Co.*, 108 U. S., 194; *Bunker Hill, etc., Co.* vs. *Empire, etc., Co.*, 134 Fed., 268.

[11] *Empire, etc., Co.* vs. *Bunker Hill, etc., Co.*, 131 Fed., 591 (600); *ibid.*, 114 Fed., 417 (419); *Cosmos, etc., Co.* vs. *Gray Eagle, etc., Co.*, 112 Fed., 4; *Cowell* vs. *Lammers*, 21 Fed., 200; *Nevada, etc., Co.* vs. *Home, etc., Co.*, 98 Fed., 673; *Hosmer* vs. *Wallace*, 97 U. S., 575; *Mower* vs. *Fletcher*, 116 U. S., 380; *Nickals* vs. *Wren*, 17 Nevada, 188; *McBrown* vs. *Moris*, 59 Calif., 72.

[12] *Davis* vs. *Shepherd*, 31 Colo., 141, 72 Pac., 57.

Rule. — **The securing of extralateral rights by means of boundary lines laid so as to overlap older locations is legal, but can only be accomplished when there is no objection by the owner of such older location.**

If he objects, the securing of extralateral rights by means of parallel end lines must be accomplished in the best manner the circumstances permit under the rules and principles relating to extralateral rights of veins.

A valid mining claim cannot be initiated by the commission of a trespass.[13]

If an area of well situated but unoccupied ground should be found containing enough mineral to make it locatable under the provisions of the law as explained herein, it may be worth while to locate such ground even though it does not contain the apex of any vein containing payable ore. For, under the common-law principle, it would have the right to all ore beneath its surface which was not contained in veins apexing in some other claim; and in a region of rich deposits this might give a valuable right to some rich body of ore.

If the owner of the senior location neglects to do his assessment work, this does not of itself operate to transfer the territory covered by a junior location to it; but, if the owner of the junior location wishes to claim the part of the senior claim that he overlaps, he must file an amended location certificate including it.[14]

Legal Presumption is that Owner of Mining Claim Owns all Mineral Beneath his Surface except as Expressly Provided Otherwise by Statute

The presumption is that the locator of a mining claim owns all the mineral within his surface lines extended vertically downward, unless a paramount right is proved to exist in the owner of some other claim by reason of a vein apexing in such other claims. In *Duggan* vs. *Davey*, 26 Northwestern, 887, the court says:

[13] *Traphagen* vs. *West*, 77 Pac., 58 (Mont.); *Clipper M. Co.* vs. *Eli M. Co.*, 194 U. S., 220; 24 Sup. Ct., 632, 48 L. Ed., 944; *Atherton* vs. *Fowler*, 96 U. S., 513; *Trenouth* vs. *San Francisco* 100 U. S., 251; *Haws* vs. *Victoria, etc., M. Co.*, 160 U. S., 303; *Cosmos, etc., Co.* vs. *Gray Eagle, etc., Co.*, 112 Fed., 4 (16).

[14] *Gurney* vs. *Brown*, 77 Pac., 357; *Johnson* vs. *Young*, 18 Colo., 625; Morrison's "Mining Rights," pp. 97, 113; *Contra*, *McPherson* vs. *Julius*, 95 N. W., 428.

"Let us consider, therefore, the nature and incidents of the title acquired by possession, location, and patent of mineral lands.

"The common-law rule is familiar. The ownership and possession of the soil extended to the center of the earth, and *usque ad cœlum*, and included everything upon its surface and within its bosom. We find that the thing, the substance of which the United States Statutes treats, is 'lands valuable for minerals,' and that it is for the disposition of these 'lands' that provision is made in chapter 6 of the Revised Statutes. It is the 'lands' in which mineral deposits are found which are 'open to purchase.' It is 'land' claimed and located for valuable mineral deposits which is the subject of application for patent, and where patent of United States issues, it is for the 'land,' at so much per acre. The definition of 'land' given in our territorial statute is concise: 'The solid material of the earth, whatever may be the ingredients of which it is composed, whether soil, rock, or other substance.' In the absence of anything in the statute to the contrary, we think it might well be concluded that one becoming the owner or possessor of any of these lands would hold them with and subject to all the incidents of ownership and possession at common law. It should be borne in mind that before the enactment of any statute recognizing and regulating his possessory rights, the mining locator, as between himself and the United States, was technically a mere trespasser upon the public domain; and that even although he might have conformed in his location to the rules and customs adopted in the mining district in which his claim was situated, yet, so far as any legal right existed to hold his claim against a new-comer, that right rested upon possession merely; hence the statute. (Rev. St. U. S., sec., 910.)" [15]

In the case of *Doe* vs. *Waterloo Min. Co.*, 54 Fed., 935, the court says:

"It is entirely true that whoever takes a grant of a lode claim takes it subject to the provision of the statute reserving to locators of other mining claims the right to follow under its surface, for the purpose of extracting the ore therefrom, any vein, lode, or ledge, the top or apex of which lies within the surface lines of such other location. (Rev. St., sec. 2322.) But until some one comes clothed with that reserved right, the holder of a government patent or certificate has, I think, the just and legal right to say, 'Hands off of any and everything within my surface lines extending vertically downward.' The mere possessor of a mining claim under license from the Government would have that right; *a fortiori*, the holder of a conveyance from the Government . . .

"Except as modified by the statute, no reason is perceived why one who acquires the ownership or possession of such lands should not hold them with and subject to the incidents of ownership and possession at common law."

Also in the case of *Parrott, etc., Co.* vs. *Heinze*, 64 Pac., 326, the court says:

[15] See p. 91

"Under the provisions of the statute, as they have been construed by these and the other cases heretofore cited, it is only the locator, or his successor or a patentee, who has any right to follow a vein into the boundaries of an adjoining owner; and the latter, holding under a location or patent, is prima facie entitled to everything beneath his surface. He may assert this prima facie title to prevent intrusion by any one who cannot show that he comes with the right acquired by a compliance with the provisions of the statutes." [16]

Consequently the owner of a valid mining claim has the right to all ore-bodies of whatever kind beneath his surface, except such as belong to a vein apexing in other claims or such blind veins as may accrue to a previously located tunnel. Such ore-bodies may be isolated masses or pockets not connected with any vein, or mineral disseminated in wash or débris in the nature of a placer deposit, or gash veins; but, unless some other person can establish a superior right by force of some statutory provision, all belongs to the owner of the surface by virtue of the common-law rule.

[16] *Wakeman* vs. *Norton*, 49 Pac., 283 Colo.; *Armstrong* vs. *Lower*. 6 Colo., 393 and 581; *Bunker Hill, etc., Co.* vs. *Empire, etc., Co.*, 109 Fed., 538; *St. Louis, etc., Co.* vs. *Montana Min. Co.*, 113 Fed., 900; *Leadville Co.* vs. *Fitzgerald*, Fed. Cas., No. 8158, 4 Mor. M. R., 381; *Ophir, etc., Co.* vs. *Superior Court, etc.*, 82 Pac., 70 (Calif.); *Consolidated, etc., Co.* vs. *Champion, etc., Co.*, 63 Fed., 540.

XVI

Should the extralateral feature of the mining law be repealed? dip rights in early California quartz-mining districts; Harper's views; Purington's views and examples discussed; confusion would result from the introduction of a new rule; conclusion.

[The substance of this chapter was printed as a contribution by the writer to Economic Geology, vol. ii, p. 62].

Should the Extralateral Feature of the Mining Law be Repealed?

As the extralateral feature of the mining law has provoked a great deal of discussion, which still continues intermittently, a brief résumé of the arguments pro and con will perhaps be not out of place in this treatise, which attempts to view the subject from both the scientific and the legal standpoint.

At the present time, the real question for discussion is, whether a change is *now* advisable, taking into account the facts that the law of extralateral rights has been in force as a United States statute over 40 years and also for many years previous as a part of the miners' rules and customs, that all metal mining (except iron) in the western States is carried on thereunder, and that no extralateral rights acquired during that period could be abrogated by any changes, but must continue to exist according to the law at the time of the initiation thereof.

The question as to whether, if a mining law were now proposed which was to go into effect in an early stage of mining development, the extralateral feature would be advisable, in the light of our present state of knowledge of ore deposits, and the further question, recently discussed in *Economic Geology*, "Do the geological relations of ore deposits justify the retention of the law of the apex?" are of theoretical and academic rather than practical interest; for such conditions have forever passed, and can never again occur, in the United States.

Let us, however, consider first the historic and geologic phase of the question. It is well known that previous to 1866 the greater part of the metal mining of the world, aside from placer and iron deposits, had been upon typical veins. This was especially true of the mining regions around Freiberg, in Germany, and of Cornwall, in England, which had been the training schools of the majority of the practical mine managers of the world previous to that time. The same was largely true of the silver deposits of Mexico and Peru, which were about all of the subterranean metallic deposits extensively worked in America previous to the California discoveries. The experience of the quartz miners in California and Nevada had been the same. It was the gold or silver-bearing vein, lode, lead, or ledge they sought and followed downward on its course, whether this was inclined or vertical. It is worthy of especial notice that in Germany, England, Mexico, and California the result on the customs and laws of the miners was the same. In one way or another, as we have already shown,[1] these gave the right to follow the vein on the dip without reference to any surface boundaries. There was perhaps no time or place in the world's history when abstract considerations or unmeaning custom had less influence on men than in the days of the California gold fever. The mining fraternity was a "fierce democracy" guided solely by what it considered right and just under the circumstances and conditions as they knew them. The rules and regulations of these mining districts, as the very complete collection by Clarence King for the tenth census shows, in all of them concerned with subterranean or quartz mining, always gave the right to follow the vein on the dip.[2]

It is inconceivable that in all these different countries the rule of allowing the vein to be followed on the dip without reference to surface boundaries should have been developed and exercised if it was unjust or not the best possible rule for existing conditions. In the case of California, the reënactment of the same rules in hundreds of independent mining camps by men absolutely untrammeled by any law or custom except their innate sense of justice and fair play proves that it is simply impossible that it should have been otherwise. Consequently, at

[1] See p. 91.

[2] *Report, Tenth Census*, vol. xiv, 1880; *Mining Law*, by Hon. Clarence King, Special Agent.

the time the mining law of 1866 and the revision of 1872 were enacted, it was as perfectly adapted to the geological conditions as then understood to exist as any human law could be; for the congressional law was simply a reënactment of the general features of the rules and customs of the mining districts, and was desired by and had the approval of the miners themselves. Senator Stewart of Nevada, who was their spokesman, in his speech already quoted, says:

"To extend the preëmption system applicable to agricultural lands to mines is absolutely absurd and impossible. Nature does not deposit the precious metals in rectangular form descending between vertical lines into the earth, but in veins or lodes varying from one foot to 300 ft. in width, dipping from a perpendicular, from one to 80 degrees, and coursing through mountains and ravines at nearly every point of the compass . . . with such a division of a mine, one owning it at the surface and another at a greater depth, neither would be justified in expending money in cost of machinery, deep shafts, and long tunnels for working of the same."

Hence the sneer of the writer whose articles will be subsequently noticed is far from justified when he says:

"Such a piece of erroneous legislation . . . could have originated only in the brain of an individual of limited mental capacity. How such a man could obtain a hearing in a council of law-framers is difficult to imagine . . . The Law of the Apex . . . begotten in bland self-complacent ignorance by a group of opulent mechanics."

All of Senator Stewart's contemporaries testify that he, the chief advocate of the bill, was by no means an individual of limited mental capacity, nor were his miner constituents "self-complacent" ignoramuses. But these were not the only men in favor of the extralateral feature of the mining law. In his report as commissioner of mining statistics for 1869,[3] Rossiter W. Raymond, Ph.D., an experienced geologist and engineer who has been for many years Secretary of the American Institute of Mining Engineers, after speaking of similar rules in other countries, says:

"Whatever be the case in Mexico in this respect, it is, I think, quite necessary at present, in our comparatively unexplored mining region, to give the miner what in early days the German law gave him, the right to follow the vein."

With practical miners and scientific experts holding the same views, it is not strange that the extralateral feature was incorpo-

[3] p. 198; 40th Congress, 3d Session, House of Representatives, Ex. Doc., No. 54.

rated into the first United States mining law. It would have been strange if it had been otherwise. The fact that Dr. Raymond afterward altered his views as to the desirability of this feature only emphasizes the fact that, in the then existing state of geological and mining knowledge, the extralateral feature was in complete accordance with the best interests of mining in the light of known conditions and features of the geology of ore deposits. It was only the dictates of plain justice, that the miner, who by his labor or by the expenditure of his money had followed down a vein and developed a paying mine, should be allowed to continue on his vein as far as it was profitable to work it, and not be obliged to cease operations at a boundary line and allow some one else to enjoy the fruits of his discovery and enterprise "without money and without price."

This being true in 1866, the next question is, have conditions changed since, so that what was once desirable in mining law is no longer so? Of course, geological conditions have not changed. They are the same now as in 1866 and for ages before then. All that has changed is our knowledge of such things. Forty years of mining have brought to light forms of ore deposits formerly unknown, so that the simple classification that answered in 1866 no longer adequately represents the present state of our knowledge; and it must be admitted that some of these are widely different from the conception of a typical vein or lode. As to a typical vein, it is still admitted that the extralateral law is the most equitable that could be devised; but it is urged that, when applied to the more complicated forms of ore-bodies, it is the cause of unnecessary litigation.

It may be noted in the first place, that according to the latest views and classifications, as previously discussed,[4] all these more complicated and legally troublesome forms of ore-bodies have a common origin with the typical fissure vein. They are all subterranean deposits from aqueous solution of the metals, except those arising directly by segregation and crystallization from fusion. The latter constitute group No. 11 of Kemp's classification, which is of little practical importance; so that the law has given the same rights on deposits which are genetically related, and in this, at least, is in harmony with the latest conclusions of economic geology.

[4] See p. 80 *et sq.*

The following are the views of a mining engineer of experience on the effect of the extralateral law of mining:

"My experience in years past has led me to believe that our lateral provisions are based upon an equitable principle applied to conditions that actually exist in our mining industry, and in spite of the volumes of testimony that have accumulated regarding the erratic conduct of some of the veins in this locality, I still hold to the opinion that our ledges here, as elsewhere in the State and throughout the Northwest, do, as a general thing, extend laterally on courses fairly continuous, and that they usually dip upon angles that are fairly uniform. You gentlemen all know this to be a fact, for there is hardly an underground map in the district, either in plan, profile or cross section, that does not demonstrate it,. hardly a stope sheet in the camp, of work performed outside of the area of hostilities, that will not convince the most skeptical of this general truth."

"Personal experience in my practice, which covers a period of over 30 years, during which time I have been in close touch with some of the heaviest operations in the State [Montana,] with hundreds of smaller concerns and with thousands of individual miners, has convinced me that the extralateral privilege is a powerful incentive to the development of our mineral resources . . . Personally, I do not know, but if I have read aright, the prospector and small operator, as we know him, is almost unknown in regions where extralateral rights are denied; and I believe that capital, in contemplating development work, unconsciously pays tribute for the extralateral privileges carried by our mining laws." [5]

This quite moderate statement of benefits aroused, however, the indignation of another prominent mining engineer, who proceeds to argue the question as follows:

"With some apologies to geometry, however, and granting that the learning of the gentleman of Montana is as ponderous as Mr. Harper has proclaimed, it becomes apparent that here a stupendous intelligence is revealed. The men of Butte, standing on the heights, look to the north, to the west, 'beyond the utmost bounds of human thought,' and, lo! the secrets of earth are uncovered! Ledge follows ledge in bewildering succession, each coursing laterally and dipping gracefully upon its fairly uniform angle, until even the seer of Butte, with his trusty stope sheet in his hand, falls back appalled at the immensity of the spectacle. A race of giants is among us a sapient host, whose contribution to human knowledge it is perhaps not too late to recognize. He is to enlarge the Hall of Fame, and multiply the pedestals to receive the graven forms of the deep-browed sages of Silver Bow, in order that future generations may pace the stately corridors and contemplate the monument erected by a grateful people to the ledge-finders of old.

"Great is the law of extralateral rights, and great is Mr. Harper, its prophet! What, then, were the founders of this epitome of legal and physical

[5] Joseph W. Harper, *Engineering and Mining Journal*, vol. xxix, p. 463.

science, which allows the discoverer of an outcrop to follow this ore-body to its termination on the dip. What ineffable wisdom is displayed by a government which permits the perpetuation upon its statute-books of a law resulting from the nebulous perplexities of a council of day-laborers and village chiefs regarding the occurrence of ore deposits! With what feelings of wondering veneration do we look back on those *soi-disant* practical miners who formulated and bequeathed to us the Apex Law, that priceless heritage of complexities . . .

"Are we in America — I ask it in all seriousness — to remain forever the victims of the deification of the peasant and the mechanic, the hewer of wood and the drawer of water? Are we to continue to accept as truth and rules of conduct the ephemeral ravings of an enriched illiterate proletariat? What is the law of extralateral rights but the misbegotten conception of untutored laborers assisted by provincial pettifoggers, who set at defiance and banish from consideration alike the physical and chemical principles controlling the deposition of ores, and the precedent of centuries of the world's previous mining experiences? In what other civilized country would the spectacle be presented which may be witnessed when a proposal for equitable mining law is touched on in our court of highest legislative appeal, namely, that of men, for whom intelligence is charitably assumed, lending support to the perpetuation of a legal enormity, pregnant with the possibilities of fraud, to which the mining history of the world holds no parallel?" [6]

In another article [7] Mr. Purington takes up the same subject, and, after relieving his feelings by the language we have quoted on a previous page about the "limited mental capacity" of the author of the extralateral law, gets down to specific instances of alleged injustice in its operation, his first example being the following:

"(*a*) In Fig. 89 is illustrated a case where one set of veins has been formed earlier in the geological history of the country than another set. Mr. *A* has commenced mining on his vein which is of the earlier origin, and which dips north. Mr. *B* has located and commenced operations on his vein, a later vein, which dips south. *A* has stoped his ore down to the point *f*, when he finds that it is apparently cut off and unites with the larger south-dipping vein. He knows that *B*'s location is prior to his own."

Litigation ensues, with the final result that A sinks on the footwall of B's vein and, mistaking the small stringer *h* for the continuation of his vein, is beaten, although later, when B has passed this point in working his prior vein, the real condition is revealed and A can proceed on the vein; but Mr. Purington fears that by this time he is "dead and buried or too poor."

[6] Chester W. Purington, *ibid.*, vol. xxix, p. 622.
[7] *Economic Geology*, vol. i, p. 572.

Poor A's misfortune arose, not from the law, which could not point out the distance he would have to sink before he could again find his vein, but from the fact that he did not employ a competent geologist, who, if the conditions were as represented in the figure, ought to have recognized the stringer and, identifying it with its surface outcrop, would have promptly told A that if he would sink the same distance (with a proper allowance for the angle of the fault) below the faulted stringer he would find his faulted vein.

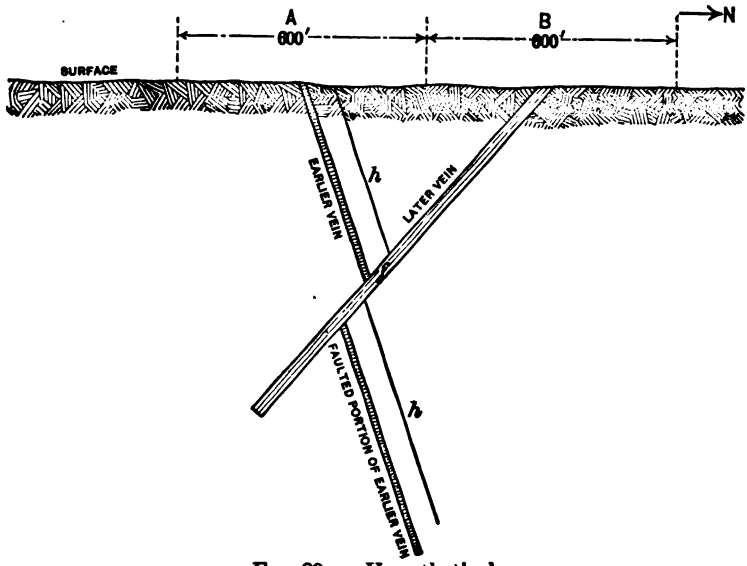


FIG. 89. — Hypothetical.
From C. W. Purington's article on Economic Geology.

What would have been the result if there had been no law of extralateral rights? A, when he reached B's vein, would have taken it downward, until it reached his farther boundary, and upward until he reached the boundary between A and B; also the further continuation of A's vein until it reached the same boundary. All that would remain to B would be A's vein after it crossed into B's territory. This would be most advantageous for A, but B would be much worse off than A was under the law of extralateral rights; so that, in this instance, the law of extralateral rights causes less injustice than its only alternative.

For his next example of supposed detrimental operation of

the extralateral law he is obliged to leave its jurisdiction and goes to South Africa as follows:

"Fig. 90 illustrates a section on the South African Rand where all claims are bounded by vertical lines. The main reef leader is a vein representing filled interstitial space in a bed of conglomerate, interbedded with other sedimentaries more or less auriferous. The line *aa* represents the boundary between the property of an Outcrop Company and that of a 'Deep Level Company.' The Outcrop Company may follow the ore down until the reef intersects this imaginary line and no farther. The Deep Level Company may extract ore from this same reef southward from this line to its south side line, and no farther. A further set of companies, called the 'Deep Deep'

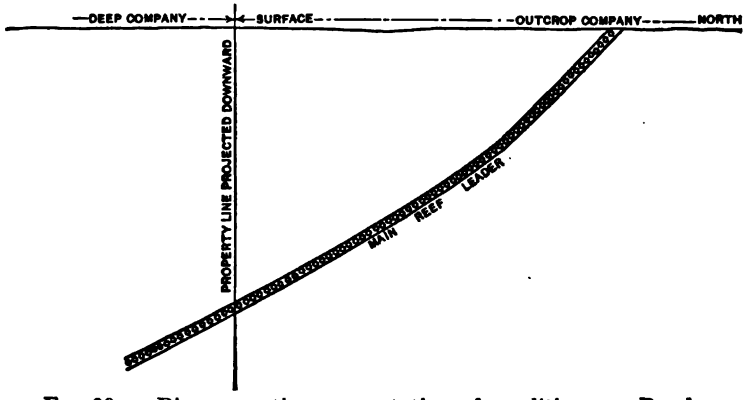


FIG. 90. — Diagrammatic representation of conditions on Rand.
From C. W. Purington's article on Economic Geology.

Companies, or second set of deeps, has been formed to exploit the main and other conformable reefs still to the south of the Deep Level Companies' ground. Mr. Hennen Jennings stated in 1903 that some fifty-three [deep] level companies had been formed, fourteen of which had reached the producing stage. In the case of all of them it was necessary to sink shafts from one thousand to two thousand feet in depth in order to reach the veins, and eighty-one shafts with an aggregate of 88,405 feet of depth had been sunk for this purpose; of these fifty had intersected the reef. Beside the enormous expenditure which these shafts represented before a pound of ore could be extracted, the various financial houses estimated a further expenditure of $252,000,000 in connection with the deep levels and other projected developments . . .

"What would have been the case if the law of the apex had existed in South Africa? Not one company of the first or second set of deeps would have been formed, and not one dollar would have been expended for the legitimate exploitation of the ore in depth excepting by the companies owning the outcrops of the veins or reefs as they are called. Numerous dikes of greenstone cut and fault the reefs, for the most part dipping much more steeply

than do the reefs themselves. Some of these dikes are accompanied by auriferous veins, not payable. Under the conditions of the apex law, some energetic individual with more astuteness than integrity would have inevitably sunk on one of these veins, claiming this or that as pay ore until he intersected a *bona fide* payable reef, which he would endeavor to lay claim to as the continuation of his vein downward, while his own 'apex' might lie hundreds of feet to the south of the actual outcrop of the reef. Lawsuits would be common. Serious capital would be shy of investment under such conditions. In short, where legal conditions are actually favorable to the production of gold on the Rand, the law of the apex would be distinctly unfavorable."

It seems in this example that even "an individual of limited mental capacity" ought to see that the operation of the extralateral law would have been better for all concerned. Even if some one with "more astuteness than integrity" had, as he supposes, sunk on an auriferous vein accompanying the greenstone dike and had attempted to claim the conglomerate reef, a lawsuit at the expense of a few thousand dollars would have finally disposed of such attempts, and the expenditure of a large part of $252,000,000, and, in addition, the enormous cost of eighty-one very deep shafts would have been mostly saved; for, under the extralateral law, probably the ore could have been nearly all removed through the outcrop shafts. Of course in some instances it might have been more economical to remove some of the ore through shafts located farther back than those on the outcrop claims, but no such number would have been necessary, as under the vertical-boundary rule that controls on the Rand. It is doubtful, moreover, if even one lawsuit would have been necessary; for, if the extralateral law had been in force on the Rand, the outcrops of the reefs, having been located first and being prior, would have taken the whole vein beyond the place of union, so that such a suit would probably have never got past a demurrer.

His other examples are shown in Figs. 91 and 92. In Fig. 91 a "great spheroidal body of copper ore" has two outcrops located by different men. This situation might present some difficulty, but would doubtless be solved by the courts with entire justice to all concerned. Such shaped deposits are infrequent; and the condition shown in the figure, of two veins rising from such a deposit and these reaching the surface at such distances apart that they would be liable to outcrop in different mining claims,

is very much rarer — probably the present example is the only one ever discovered. At any rate they do not occur in sufficient numbers to rise to the dignity of even an "exception" to the general rule. Statutes and the ordinary rules of law can only be constructed to meet conditions that occur in a reasonably general and frequent manner. Infrequent and exceptional occurrences must be left to be dealt with as they arise by the courts; and the

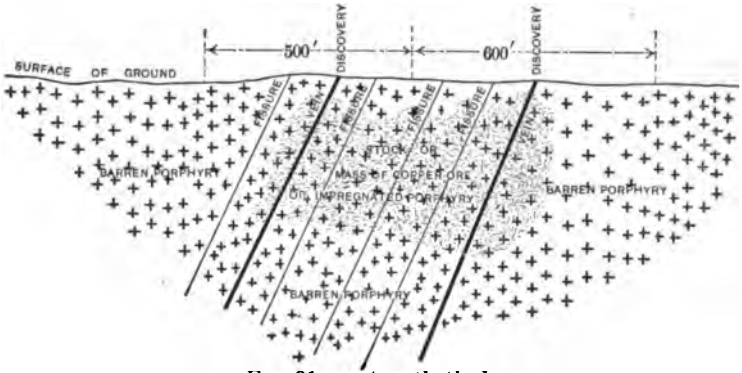


FIG. 91. — Hypothetical.
From C. W. Purington's article on Economic Geology.

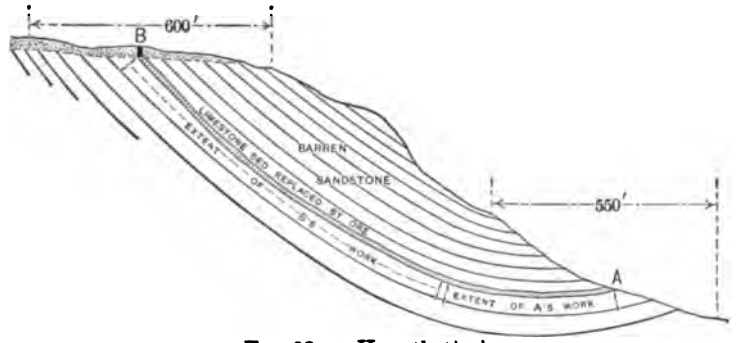


FIG. 92. — Hypothetical.
From C. W. Purington's article in Economic Geology.

latter, be it said to their credit, are usually equal to the emergency and decide such cases justly.

In Fig. 92 a silver-impregnated limestone bed outcrops twice, and locations are made on both outcrops. A quite diligent reading of practically all the mining decisions in the United States has not disclosed any such situations in any litigation that has

reached the higher courts. Mr. Purington states that the figures represent actual ore deposits; but, as he does not state otherwise, we must presume that the statements as to discovery, marking, and litigation are hypothetical. As to the situation disclosed by Fig. 92, an inspection shows that, under the rule of only mining to the vertical planes through the boundaries, neither A nor B would get as much as Mr. Purington allows him in his figure under the extralateral law, and so would be worse off than under it.

These are the worst instances that the "fiercest" critic of the extralateral feature of the mining law is able to cite; and, when analyzed, it turns out that even in these the preponderance is strongly in favor of the extralateral law doing justice rather than its only alternative — the so-called common-law rule of subsurface rights limited by vertical planes through the surface boundaries.

Another writer [8] advances as a geological objection the fact that many veins do not have definite walls in the following language:

"Thus the law fails precisely where protection to the most extensive interests is at stake, because in form and character, and from the absence of clearly bounding walls, our greatest veins do not in a large majority of cases conform to the geological prescription of the law-makers."

If well founded, this would be a serious objection, for clearly defined walls are often wanting; but Mr. De Kalb is mistaken in presuming that the law requires "clearly bounding" or any other kind of definite walls in order that the vein or deposit may be worked extralaterally. In the case of *Hyman* vs. *Wheeler*, 29 Fed., 347, the court says:

"In the discussion at the bar and in the opinions of the witnesses it was assumed . . . that it was a matter of importance to ascertain whether the ore was separated from country rock by planes or strata of that rock visible to the eye. I see no reason for such distinctions. It is true that a lode must have boundaries, but there seems to be no reason for saying that they must be such as can be seen. There may be other means of determining their existence and continuance, as by assay and analysis."

The United States Supreme Court also reaches the same decision. It quotes and adopts the following language in reference thereto:

[8] Courtney de Kalb, *Economic Geology*, i, p. 801.

"In this definition [of a vein] the elements are the body of mineral or mineral-bearing rock and the boundaries; with either of these well established, very slight evidence may be accepted as to the existence of the other. A body of mineral or mineral-bearing rock in the general mass of the mountain, so far as it may continue unbroken and without interruption, may be regarded as a lode, whatever the boundaries may be. In the existence of such a body and to the extent of it, boundaries are implied."[9]

Another geological objection made by Mr. DeKalb is the difficulty of determining the rights of "masses" with "no single top or apex, and no ascertainable dip." Such bodies, if unconnected with any vein, would come within the common law presumption that all beneath the surface belongs to the surface proprietor, for this presumption controls except where the statute expressly provides otherwise.

"Except as modified by statute, no reason is perceived why one who acquires ownership or possession of such lands should not hold them with and subject to the incidents of ownership and possession at common law."[9a]

Consequently the case of a deposit in the form of a mass without any apex would not present any serious difficulties. Not being within the extralateral statute, its ownership would be decided according to common law rules. It is no reason that the extralateral law should be repealed that this particular form of deposit does not come under its control.

Consequently, these supposed geological objections to the extralateral feature are without foundation. Therefore, considering the law with reference only to geological conditions, in the light of the latest knowledge, concerning the same it appears that the extralateral law accomplishes the "greatest good for the greatest number," which is all that any law can do. It, therefore, ought not to be repealed on account of geological considerations.

But, as heretofore mentioned, there is another very weighty reason against substituting another rule for that of extralateral rights, in the fact that the latter has been the law for over 40 years, during which time thousands and thousands of locations have been made and many of these developed into properties of enormous value. Existing extralateral rights could not be abrogated by the enactment of a new system, but must continue to exist according to the law at the date of making the location.

[9] *Iron-Silver M. Co.* vs. *Cheesman*, 116 U. S., 529.

[9a] *Doe* vs. Waterloo, 54 Fed., 935.

Locations made after the passage of such a law would be subject to the extralateral rights of claims previously located, while the owner thereof would have no compensatory right of pursuing his vein or deposit beyond vertical planes through his boundaries.

The result would be the introduction of tenfold worse confusion than the severest critic of the extralateral law can conjure up in his imagination, when under the sway of his darkest apprehensions. This fact, and the inherent justice of the principle, far outweigh any possibilities of future litigation that may be involved in the continuance of the extralateral law, even when applied to the later discoveries of anamalous forms of ore deposits.

It is unquestionably true that precious metal and copper mining have been attended with a great deal of litigation in the United States, and that in a considerable part of such litigation the extralateral law has been involved; but the latter is not responsible for nearly all of the litigation that has afflicted mining. The truth is, that from the very nature of the industry of mining for the precious metals, involving more than most others the elements of chance — awarding to some rich prizes and to others only blasted hopes and bitter disappointments — it is peculiarly subject to bitterly fought litigation. This has been the case in all countries and times. It long ago attracted the attention of the King of Spain, who, in 1785, in promulgating new mining ordinances for Peru, said:

> "The King, convinced of the deteriorated condition in which the important branch of mining of that kingdom has fallen, from a want of method in governing the *Reales* of mines, *and also on account of the frequent and troublesome litigations* in which the individuals of this useful profession are involved, causing them enormous expenses and distraction from their business by requiring them to reside in the capital and in other places where they go in the prosecution of their lawsuit.[10] . . .

A large part of the litigation that afflicts mining in the United States arises from questions connected with the making and marking of a location, etc., into which the extralateral law does not enter, while another large part is about corporate organization and management. I know of an Arizona gold mine, which held a good position on the dividend-paying list; but litigation broke out within the corporation between the three main stockholders, and has been carried on in the courts 13 years in one form or

[10] Halleck on Mines, p. 589.

another, and is still unsettled, although the mine has filled with water and is idle. There is nothing in the annals of extralateral litigation that equals the long-drawn-out contests about the New Jersey zinc deposits (described in the chapter on Property in Minerals) which arose under common-law principles.

A writer familiar with mining litigation in Colorado says, in the course of a discussion on the extralateral feature: [11]

"Also I must believe that the Doctor dictated hastily in stating that the 'extralateral' underlies 99.9 of our mining litigation. I know to a certainty that no such statement is true of the most productive region of the San Juan in Colorado, at least so far as the number of cases is concerned; in fact, I would be inclined almost to reverse the figures. My observation is that the overwhelming number of cases are 'adverse' suits, to say nothing of many suits over grub-stakes; division of interests, trusteeships, etc."

In a recent number of the *Denver Mining Reporter* the same subject is discussed. The reason for the prevalence of this particular phase of mining litigation as well as the remedy therefor is so clearly pointed out that I quote the following:

"The discovery of a new mining district has in the past been so fruitful of litigation that it has become possible to predict with a fair degree of certainty even the character of the larger proportion of lawsuits that will be filed. These are mainly the outcome of the custom of 'grubstaking,' which in itself is commendable and has been responsible for the discovery and successful development of many mines. The loose manner in which agreements are entered into, however, is one of the weak points of the practice and should receive more attention for the benefit of both parties concerned.

"It is an unfortunate trait of human nature that unless a record be made of the transactions and agreements of to-day, the changed conditions of a year hence will so alter the meaning and import of those transactions of a year ago as to forever preclude the possibility of living up to them. If a verbal grubstake agreement be made and carried out for several months or a year, and no discoveries be made to encourage the party who is bearing the expense, it is not at all improbable that he will, by a series of mental contortions, convince himself that he has been bearing more than his share of the burden and that any discoveries made cannot be shared equally.

"If at this critical moment, the man in the field should strike a valuable ore deposit, the mental attitude of his partner at home would be intensified by the prospects of acquiring sudden wealth and the result would be that the man in the field would be left out of consideration.

"His only redress would lie in an appeal to the courts for justice, but if he were not possessed of an agreement which would stand the technical requirements of the law, his chances of obtaining justice would be scant.

[11] W. F. Mathes, *Engineering and Mining Journal*, vol. lxxvii, p. 1036.

The necessity for writing grubstake agreements is just as urgent as for any other purpose, and should be insisted upon by both parties to the contract."

The application of the common-law principle of subterranean rights bounded by vertical planes through the surface boundaries would be easier and perhaps more satisfactory in relation to some anomalous forms of ore deposits; but these are a small minority in comparison with the total number of workable deposits. The expense of settling by law disputes about the comparatively small number of doubtful deposits is a very much smaller detriment to the precious-metal mining industry than the useless expense, losses, injustice, and discouragement from development of prospects that would result from the application of the unyielding common-law principle, that the proprietor of the surface owns everything beneath it to the center of the earth.[12]

On the whole, it appears that it would not be advisable to repeal or alter the extralateral feature of the United States mining laws.

[12] The following, from a recent number of the *Wickenburg* (Ariz.) *Miner*, is a typical expression of the attitude of the real working miners and prospectors toward the extralateral feature of the law.

"In regard to the present apex law, we think it should remain as it stands. It would work a great injustice on miners who have gone to the expense and trouble of opening up their ground to have to quit as soon as they reach their side lines. In the event of the passage of a law limiting the rights of mine owners to their side lines, there will be a general disapproval of it. The result of such a law would be to retard the mining industry because it would mean that men who put in their time and money would have to buy out their next door neighbor or quit. Probably the owner of the adjoining claim would not care to sell, or would ask an exorbitant price. He may not have the means or desire to open up his own ground, and there the matter would rest for months and possibly years. Our present law regarding this matter is good enough for us."

XVII

Placers; procedure of making location, etc.; ancient buried placers; petroleum locations.

Definition of a Placer

A PLACER has been defined as "an alluvial deposit derived from the disintegration of metalliferous rocks and ore-bodies of various origin." [1] This is perhaps as good a scientific definition as can be given, although with it is usually associated the idea that the matter composing the deposits was, after disintegration, transported by the agency of running water from its original situation to the place where found, together with the further idea that during such action there has been a concentration of the valuable mineral from a wide dissemination throughout the rocks, so sparse as not to be payable, into smaller spaces, such as the bottom of the river channels, which renders the workings of such enriched portions profitable.

The United States Supreme Court gives the following definition of a placer claim:

> "By the term 'placer claim,' as here used, is meant ground within defined boundaries which contains mineral in its earth, sand, or gravel; ground that includes valuable deposits not in place, that is, not fixed in the rock but which are in a loose state, and may, in most cases, be collected by washing or amalgamation without milling." [2]

However, the statutory placer claim is much broader than the above definition. The words of the statute are: "claims usually called 'placers,' including all forms of deposits, except in veins of quartz or other rock in place." After the enactment of this statute in 1872 there was considerable doubt as to what kind of claims, besides typical placer deposits, came under the provisions of this section of the statute. An example of these is land containing petroleum or natural gas. But all doubt on this subject

[1] James D. Geikie, "Structural and Field Geology," p. 229.
[2] *United States* vs. *Iron-Silver, etc., Co.*, 128 U. S., 673 (679).

has been settled by an Act of Congress (Feb. 11, 1897, given in full in the Appendix), which authorizes, under the placer provisions of the mining law, locations of "lands containing petroleum or other mineral oils, and chiefly valuable therefor."

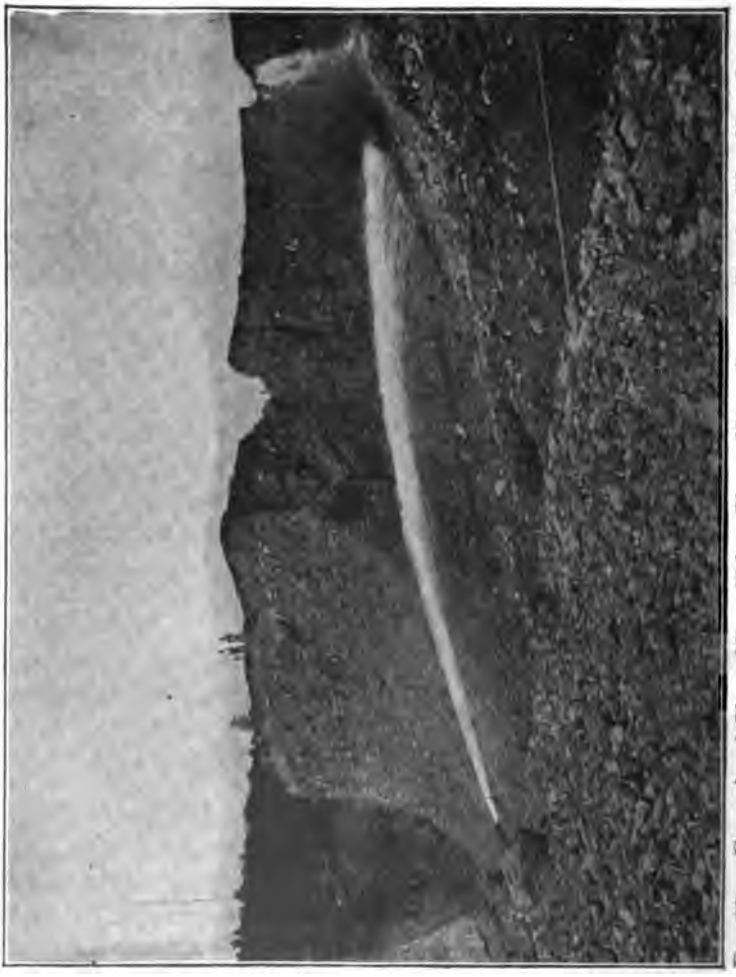


FIG. 93. — Example of Placer Mine: Nelson Placer Mine, Canyon District, Blue Mts., Oregon. From pt. II, 22d Ann., U. S. G. S.

The same privilege had, by Act of Congress, Aug. 4, 1892, been extended to lands "chiefly valuable for building stone."

Also, on Jan. 31, 1901, Congress passed an Act declaring

"That all unoccupied public land of the United States containing salt

springs, or deposits of salt in any form, and chiefly valuable therefor, are hereby declared to be subject to location and purchase under the provisions of the law relating to placer-mining claims."

The following kinds of mineral are classed by the Land Department as placers, and patented as such: Alum, asphaltum, soda, sulphur,[3] kaolin or fire-clay, borax beds,[4] auriferous cement, mica, marble, slate,[5] gypsum,[6] and phosphate.[7]

The same rules and observations as to posting, notice, and recording that apply to lode claims apply also to placer claims.

A location by one person may include land not to exceed 20 acres. If the land on which the location is made is surveyed, the location must conform to such survey, as nearly as practicable, the smallest subdivision considered being 10 acres[8] in square form. Five acre rectangular tracts are not recognized.[8a] The fact that, if a placer location were made to conform as nearly as possible to the *system* of public land surveys, it would embrace small portions of land not valuable as placer ground is no excuse for failing to conform to the legal subdivisions where, if so confirmed, the land as a whole would be more valuable for placer mining than for agricultural purposes.[8b] The requirement of conformity as nearly as practicable to the *system* of United States land survey applies with equal force whether the ground is located on surveyed or unsurveyed land.[8c] On unsurveyed land the conformity to the *system* of United States land surveys is sufficient if claims are located in rectangular form with lines east and west, north and south, and with proper dimensions to make at least ten acres. "Gulch placers," however, may be located according to environment, but as nearly as practicable in conformity with the land survey system.[8d]

The statutory provision allowing 160 acres to be patented to an association of eight persons has been made the vehicle of rank fraud on the Government. One person locates 160 acres, using the names of seven "dummies," who afterward convey to him. When this species of fraud is proved, it will not be allowed to stand by the courts.[9]

[3] 1 L. D., 561 (rev. ed.).
[4] 1 L. D., 565 (rev. ed)., 17 L. D., 550.
[5] 25 L. D., 354.
[6] 29 L. D., 181.
[7] 18 L. D., 58, 26 L. D., 600.
[8] See Land Office Regulations, p. 396.
[8a] 34 L. D., 260.
[8b] 34 L. D., 42.
[8c] 32 L. D., 363.
[8d] 36 L. D., 363.
[9] *Mitchell* vs. *Cline*, 84 Calif., 409; *Gird* vs. *Calif., etc., Co.*, 60 Fed., 531; *Durrant* vs. *Corbin*, 94 Fed., 382.

The United States statute does not require the marking of the boundaries of a placer claim, but the Land Office has established a rule requiring the same markings as for quartz claims.[10] It has been expressly decided by the Supreme Court of Arkansas [11] that the boundary line of placer claims must be marked the same as quartz claims; and there are statutory provisions to that effect in most of the mining States.[12]

At first the California Superme Court took the same view of this subject as the Arkansas court and Lindley,[13] but in a late case [14] it expressly overrules these decisions and holds that where placer ground has been surveyed, and the locations made according to legal subdivisions, that the boundaries need not be marked on the ground, nor is any other description necessary than by legal subdivision.

Representation work or annual labor is required to hold a placer as well as a quartz claim, although there is nothing in the statute requiring annual labor on placer claims.[15] This is stated to be an instance where by judicial oversight a wrong interpretation was placed on a statute and was afterward followed as a precedent without examination until such incorrect interpretation had attained the binding course of law as fully as if it had been the correct one.[16]

Patents to placer claims are obtained by the same procedure as those to quartz claims, except that where they conform to a previous land survey no further surveys or plats are required. Also where the placer claims contain a vein or lode, special provision as to obtaining title to such included vein is made.[17]

1. If there is a known lode or vein within the placer claim, it may be surveyed or included and patented together with the placer claim. Twenty-five feet of ground on each side of the lode must be included therewith and paid for at the rate of $5 per acre.[18]

[10] See Land Office, rule 64, Appendix.

[11] *Worthen* vs. *Sidway*, 79 S. W., 777.

[12] See Lindley on Mines, 2d ed., sec. 454.

[13] *White* vs. *Lee*, 78 Calif., 593, 21 Pac., 363; *Anthony* vs. *Jillson*, 83 Calif., 296, 23 Pac., 419.

[14] *Kern Oil Co.* vs. *Crawford*, 76 Pac., 1111.

[15] *Carney* vs. *Arizona M. Co.*, 65 Calif., 40; *Morgan* vs. *Tillotson*, 15 Pac., 88; *Chapman* vs. *Toy Long*, 4 Sawy., 28; *Jackson* vs. *Roby*, 109 U. S., 440; *Sweet* vs. *Webber*, 7 Colo., 443.

[16] An interesting history of the matter is given in Morrison's "Mining Rights," 12th ed., p. 108.

[17] R. S., sec. 2333.

[18] *Aurora Hill M. Co* vs. 85 *M. Co.*, 34 Fed., 515.

2. Where a vein or lode is known to exist within a placer, all right to it is waived unless claimed and included in the placer location as above, and it is open to location by any one.[18a]

3. Where there is no known vein at the time of patenting, the title to all valuable minerals within vertical planes through the boundaries of the claim pass, including any after-discovered lodes.

A good deal of litigation has arisen over what constitutes a "known" vein or lode in this connection. The United States Supreme Court held that the fact, that a lode was known to exist 300 ft. from the boundary of a placer claim, was not evidence that there was a known lode in the placer location.[19] However, a regularly located and recorded lode within a placer claim is a *known* lode within the meaning of the statute, even though the placer claimant has no knowledge of its existence.[20] Also, it is sufficient to exclude it where the lode has been notoriously cut in a tunnel within the claim.[21]

On the other hand, it has been held that lode or outcrops known but not considered worth locating, or not having sufficient value to justify exploration for working, are not within the exception of the patent.[22]

If a lode is discovered at any time before application for patent it will be excepted, even though not known to exist at the date of location.[23]

Ancient Buried Placers

Old placer deposits which have become buried beneath lava flows or other strata give a form of ore deposit the legal status of which may be said to be still doubtful. The question is whether such a body comes within the provisions relating to placers or whether they come within the section relating to veins and lodes, according to the liberal interpretation and very wide scope given to the latter form of deposits by the decisions of the courts that we have discussed above.

[18a] *Mutchmore* vs. *McCarty*, 87 Pac., 85.

[19] *Dahl* vs. *Raunheim*, 132 U. S., 260.

[20] *Noyes* vs. *Mantle*, 127 U. S., 348.

[21] *Iron-Silver Co.* vs. *Starr, etc., Co.*, 143 U. S., 394.

[22] *McConaghy* vs. *Doyle*, 75 Pac., 419; *O'Keel* vs. *Cannon*, 52 Fed., 898; *Brownfield* vs. *Bier*, 39 Pac., 461; *Butte Co.* vs. *Sloan*, 40 Pac., 217; *Montana, etc., Co.* vs. *Migeon*, 68 Fed., 811, 77 Fed., 249; *Casey* vs. *Thieviege*, 48 Pac., 394: *Mutchmore* vs. *McCarty*, 87 Pac., 85.

[23] *Dahl* vs. *Raunheim*, 132 U. S., 260.

The first case involving this question that came before any court was *Gregory* vs. *Pershbacker*, 73 Calif., 109, in which case it was decided that buried placers are not locatable as lodes. The description of the deposit as given in the report of the case is as follows:

"in the year 1856, John Barrett, and others associated with him, discovered on the westerly bank of Little Butte Creek, on the southeast quarter of said section 13, a thin seam of gravel cropping out between an underlying bed of slate-rock and an overlying bed of lava-rock, and finding that the said seam of gravel was gold-bearing, located the same as and for a mining claim, under the name and designation of Burch and Barrett Claim, and thereupon commenced to work and develop their said claim by excavating a tunnel into the hill, following the course of the channel, and the said channel became thicker and better developed and more valuable as they pursued and ex-

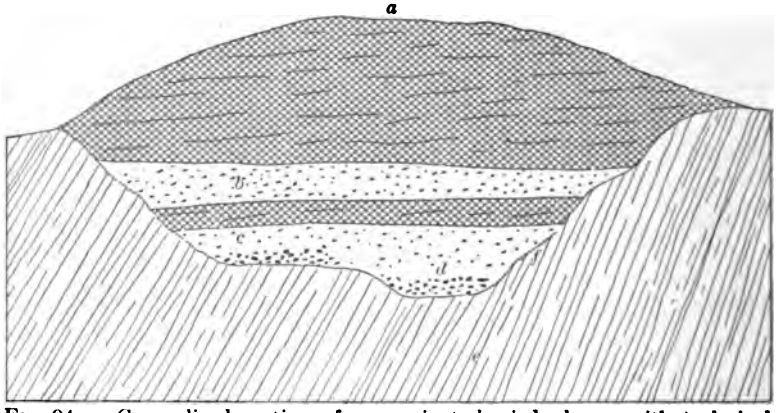


FIG. 94. — Generalized section of an ancient, buried placer, with technical terms as used in California; *a*, volcanic cap; *b*, upper lead; *c*, bench gravel; *d*, channel gravel, *e*, bed-rock; *f*, rim.

From Spurr; Geology Applied to Mining.

plored the same into the hill, and showed that the said deposit was a well-developed channel, varying from a few inches to 8 and 10 feet in thickness, and from 8 or 10 to 40 feet in breadth, with a well-defined bed and side walls of slate-rock, and capped by a thin stratum of clay, with an overlying body of lava-rock for hanging wall . . . that said channel in its course into the hill descends or drops at an angle on an average of about 8 degrees; that the bed-rock of said channel during its entire length, so far as worked, is composed of a slate formation, and upon that slate formation said gravel rests, and over said gravel is a formation of clay gouge overlapping said mineral deposit, and that above said clay seam is the lava which extends to the surface, and that the overlying lava rock at the point where said channel crosses the easterly line of the said southwest quarter aforesaid is about 600 feet in

thickness; that said gravel is of a hard nature, and in mining and extracting the same has to be detached from its position by the use of picks and gads, and when extracted is taken out to the surface and there washed, and in so washing gold is extracted therefrom."

The court then cites the definition given in the Eureka case of a vein or lode, various definitions of placers and says:

"That the bed of gravel mentioned in the findings, to the limited extent it has been prospected by the intervenors, 'descends or drops on an average of about 8 degrees,' does not of itself make the gravel deposit a lode with 'a top or apex,' nor contradict the theory that the channel was the channel of a mountain stream or torrent . . . the gravel bed with gold therein, as described in the findings, is a placer."

However, in a Nevada case, *Jones* vs. *Prospect Mt. Tunnel Co.*, 31 Pac., 642, it was held that a deposit quite similar to that in the California case was within the lode provision of the statute. The description given in the case of the character of the deposit is as follows:

"A certain formation, which the defendant claimed to be the ledge, had been traced on its inclination outside the plaintiff's boundaries, and a large amount of work there done upon it. If this was the ledge, as the defendant claimed, it tended to show that its apex was outside those boundaries. According to the witnesses, it consisted of broken limestone, boulders, low-grade ore, gravel, and sand, which appeared to have been subjected to the action of water. This was found at a depth of several hundred feet, and where there seems to have been no question that it was within the original and unbroken mass of the mountain. So far as was shown, the rock on either side was fixed, solid, and immovable. Mineral matter so situated, no matter where it was originally formed or deposited, is 'in place,' within the meaning of the law. The manner in which mineral was deposited in the places where it is found is, at the best, but little more than a matter of mere speculation; and to attempt to draw a distinction based upon the mode or manner or time of its deposit would be utterly impracticable and useless. The question was long ago settled by the courts. In *Stevens* vs. *Williams*, 1 Morr. Min. R., 557, Hallett, J., said: 'And when this act speaks of veins or lodes in place, it means such as lie in a fixed position in the general mass of country rock, or in the general mass of the mountain. As distinguished from the country rock, this superficial deposit may have been brought into its present position by the elements, or may have been washed down from above, or may have come there as alluvium or diluvium, from a considerable distance. Now, whenever we find a vein or lode in this general mass of country rock, we may be permitted to say that it is in place, as distinguished from the superficial deposit, and that is true whatever the character of the deposit may be. . . . It is in place if it is held in the embrace, is inclosed by the general mass of the country.'"

But the deposit described in the Nevada case is similar in nearly all respects to that found in the California case, and the language of the decision of the Nevada court would undoubtedly include the mineral deposits found in the California case. Consequently, until passed upon by the United States Supreme Court, the legal status of ancient, buried placers is doubtful. It is one of those instances in which very plausible arguments can be adduced on each side. Such a formation is "in place" in the mass of the mountain as much as the most typical fissure vein ever found. The fact that such deposits are usually approximately horizontal makes no difference. On the other hand, the undoubted method of the origin of the deposit being originally sedimentary in nature, which is the way in which typical legal placers are formed, and the fact that deposition from solution (the vein-filling process) had nothing to do with their formation, would be strong arguments in favor of their being included under the placer provisions. It seems that the chances preponderate, if this matter ever comes before the Supreme Court that the buried placers will be held to come under the Placer Act.

After a valid placer location has been made the owner thereof has exclusive possession of the surface, and another person cannot legally go upon such location without the consent of the owner and prospect for unknown veins and lodes. If he does so, he is a trespasser, and cannot thus initiate any legal rights to any veins or lodes that he may discover in such placer location.

"Perhaps if the placer owner, with knowledge of what the prospectors are doing, takes no steps to restrain their work and certainly if he acquiesces in their action, he cannot after they have discovered a vein or lode, assert right to it, for generally a vein belongs to him who has discovered it, and a locator permitting others to search within the limits of his placer ought not thereafter to appropriate that which they have discovered by such search." [34]

The necessity for a discovery of mineral in placer ground, and of oil in land which is located under the same section of the statute, is discussed in *Sierra, etc., Co.* vs. *Home, etc., Co.*, 98 Fed., 673, in which the court says:

"the difficulty with his location of Jan. 1, 1896, is that proof fails to show that he made, prior to the posting of a notice and marking of the boundaries, or subsequent thereto under that location, any discovery of mineral in or upon then and . . . Mere indications, however strong, are not, in my opinion

[34] *Clipper M. Co.* vs. *Eli Co.*, 194 U. S., 200.

sufficient to answer the requirements of the statute, which requires, as one of the essential conditions to the making of a valid location of unappropriated public land of the United States under the mining laws, a discovery of mineral within the limits of the claim."[25]

On the same subject the United States Supreme Court says[26] in effect that there must be such a discovery made in relation to petroleum as to justify a prudent person in the expenditure of money and labor in exploration therefor. In this case the testimony as to discovery was that the locator saw "indications" of oil consisting of a spring where

"the oil comes out and floats over the water in the summer time when it is hot. In June, 1895, there was a little water with oil and a little oil with water coming out. It was just dripping over a rock about two feet high. There was no pool; it was just dripping a little water and oil, not much water."

Held that this evidence was not sufficient to overthrow the finding of the California court that there was no discovery.

[25] The same question was before the court in *Olive, etc., Co.* vs. *Olmstead*, 103 Fed., 568, and the same decision was reached.

[26] *Chrisman* vs. *Miller*, 197 U. S., 313.

XVIII

Water; common-law rules; water rights in Western States; tide lands; underground drainage of mines, etc.; percolating water; ice.

Water

WATER is a mineral [1] and forms an important part of the earth's crust. For our purposes water may be divided into two kinds: (1) that found on the surface in the forms of springs, streams, rivers, ponds, lakes, and the ocean; (2) subterranean water in the forms of underground streams, percolating masses, and stationary bodies in cavities or saturating porous strata. It is believed also that the original rock-material of the globe, such as is brought up by volcanic action, contains water as an original constituent which, during volcanic action, is given off as steam, and which in the later stages of expiring volcanism forms hot springs, geysers, etc. This interesting topic is more fully discussed elsewhere.[2]

The law relating to the different kinds of surface waters forms an extensive division which cannot be discussed here. It must suffice to give a few general principles necessary to a proper understanding of those rules which govern the second division, subterranean waters, with a somewhat fuller statement of the law as to the appropriation of water for mining, etc., in the Western States and Territories.

General Legal Rules Concerning Surface Water and Surface Drainage

The ocean belongs to no individual or nation. It is a barren and unappropriated waste. Fish, or any other thing of value taken from the sea, belongs to the finder. The sea adjacent to the shores of a nation is held, according to the principles of international law, to belong to such nation, for the distance of a marine league (three miles) from low-water mark; this being the

[1] See p. 55.

[2] See p 77 *et sq.*

distance that could be commanded by cannon on the shore about the end of the eighteenth century, at which time a common doctrine or agreement on this subject seems to have been reached among civilized nations. But soon the range of artillery was much increased; and though the above-mentioned width of the shore belt is usually mentioned in treaties, a late writer [3] states his belief that this limit will be enlarged. The Institute of International Law has voted for a width of six miles. Fishing, or the taking of any other product of the sea, — pearls, amber, etc, — is reserved within this belt to the adjacent nation. The beach is termed in law "tide lands," and is defined as land "uncovered at ordinary low tide and covered with water at ordinary high tide." [4] The title to such land is in the State.[5] In the United States this means the individual State in the case of those that have a boundary or boundaries of tide water, in the case of the Territories it means the United States.[6]

The rule is different in Massachusetts, by virtue of a colonial ordinance, passed in 1747 and still remaining in force, which extends the title of the owner of land bounded by tide water from high-water mark to low-water mark, if this is not over 100 rods.[7]

The same is true of New Hampshire, because it was once under the jurisdiction of Massachusetts. In Rhode Island the owners of land abutting on tidal waters have certain rights to wharf out over tide lands.

Consequently, any mineral or other rights in tide lands must come from the individual State adjacent, or, in the case of Territories bounded by the ocean, from the United States, and mining claims cannot be located on tide lands, wholly or partially. At present, Alaska is the only continental part of the United States under the territorial form of government that is adjacent to the ocean. The various insular possessions of the United States and the "Canal Zone" would all probably be held to come under this principle, subject, of course, to rights gained in any tide land previous to the acquisition by the United States of such possessions. The general laws for the disposition of mineral or

[3] Oppenheim, "International Law," vol. i, p. 240.

[4] *Baer* vs. *Morran Bros.*, 153 U. S., 287.

[5] *Shively* vs. *Bowlby*, 152 U. S., 1; *Mann* vs. *Tacoma Land Co.*, 153 U. S., 273.

[6] The case of *Shively* vs *Bowlby*, 152 U. S., 1, contains an elaborate review and discussion of this subject. See also Gould on Waters, secs. 56–78.

[7] *Commonwealth* vs. *Alger*, 7 Cush., 53, 76; *Commonwealth* vs. *City of Roxbury*, 9 Gray, 451.

agricultural lands do not apply to tide lands belonging to the United States.[8]

On account of the discovery of gold in the sea beach at Nome, Alaska, Congress, on June 6, 1900, extended the right to explore for and mine gold and other precious metals in "all lands and shoal water between low and mean high tide on the shores, bays, and inlets of Bering Sea."[9] This law (given in the Appendix) only allows "temporary possession" for exploration and mining, and such land cannot be patented. The size of the claims, etc., is subject to the "reasonable rules and regulations" that the miners in such district may make.

On the land, surface water, so long as it remains on a proprietor's land, is his property as much as the soil, and he can use it as he may wish. The rule of the civil law, that surface water has a right to flow from land according to the course that it followed under natural conditions, has been adopted in most of the jurisdictions of the United States. This is the foundation of the laws relating to surface drainage, which are exceedingly important, especially on the level prairie plains of the Mississippi valley.

Legal Rules Concerning Subterranean Drainage

The general principles of the law regulating subterranean drainage are similar to those governing surface drainage. The general rule is, that the miner is not liable for any damage that may result from the natural flow of water from his workings into the workings of a lower adjacent mine. He cannot, however, increase such flow by pumping or any other artificial means; but for such flow or collection of water as results from operating his mine in the ordinary and proper manner he has a right of natural drainage.

In the leading case of *Smith* vs. *Kenrick*,[10] the owner of a coal mine, removing the coal from his premises underground, caused the water to flow into an adjoining colliery that was at a lower level. This was done in the course of ordinary mining and removing the coal in the manner most advantageous to the owner of the higher mine. It was held that no damages could be awarded for any injury caused by flooding of the lower mine; that

[8] *Shively* vs. *Bowlby*, 152 U. S., 1; *Baer* vs. *Moran*, 153 U. S., 287.
[9] 31 Statute at Large, pp. 321, 326, 330, given on p. 394.
[10] 7 Common Bench, 515.

the lower mine was subject to the servitude of receiving the water from the higher mine, just as lower land on the surface is subject to the servitude of receiving the drainage from higher adjacent land.

In a later case [11] it was also held that a mine owner has the right to work his mine in a usual and proper manner even though he might thereby cause water to flow by gravitation into a lower mine; but he has no right, by pumping or otherwise, to be an active agent in sending water from his mine into an adjoining one. This rule has been followed in those American jurisdictions where the subject has arisen.[12] But if damage results from the negligent and careless working of his property by the upper proprietor, he is liable therefor.

In Arizona and Colorado there are statutes governing mine drainage and providing means to compel all owners of mines having a common drainage, or so connected or situated that pumping out one will drain the others, to contribute their just proportion of the cost of such drainage.

Common-law Rules as to Rights of Riparian Owners

There is no ownership of streams of running water, in the ordinary sense, whether navigable or non-navigable; but the riparian owner has the right, by virtue of his proprietorship of the shore, to have the water of the stream flow as in a state of nature, without material alteration or diminution, unless there is some express grant, license, or prescription changing or limiting such right. He also has the right to use the water flowing past his land for ordinary purposes, such as drinking, washing, or for his live stock. He further has a right to make a reasonable use of the water for extraordinary purposes such as manufacturing, irrigation, etc.; but these must not interfere with the *ordinary* uses of all the riparian proprietors, nor with similar extraordinary uses by other riparian proprietors for manufacturing, etc. No riparian owner has a right to pollute any stream; and he is liable for putting into the water of a stream any deleterious substance.[13]

[11] *Bond* vs. *Williamson*, 15 Common Bench (N. S.), 375.

[12] *Losee* vs. *Buchanan*, 51 N. Y., 476; *Garland* vs. *Towne*, 55 N. H., 57; *Kauffmann* vs. *Griesimer*, 2 Casey, 407; *Martin* vs. *Riddle*, 2 Casey, 415; *McKnight* vs. *Radcliff*, 8 Wright, 156; *Douty* vs. *Bird*, 10 P. F. Smith, 48; *Marshall* vs. *Wellwood*, 38 N. J., 339, 20 Amer. Reports, 394; *Nicholas* vs. *Marshland*, L. R., 10 Ex., 255; *Bannon* vs. *Mitchell*, 6 Ill. App., 17.

[13] A full review of the decisions and the statutes in the United States on the subject of Pollution of Inland Waters is found in No. 152, Water supply and Irrigation Papers, United States Geological Survey.

This principle has been applied in many States where water from mines, etc., was allowed to flow into streams, contaminating the water. In Pennsylvania, contrary to the rule in other States, the law seems to be that the owners of a coal mine are not liable although water containing coal dust, etc., flows from the mine into a stream and pollutes the waters thereof. The reason given for allowing this was that the water from the mine contained only coal and was therefore in its "natural state"; but this reasoning is entirely fallacious and has not been accepted in any other State.[14] A very complete discussion of the subject, with a review of the course of decisions concerning riparian rights, is contained in *Beach* vs. *Sterling Iron and Zinc Co.*, 9 Dick (N. J.), 65; 10 Dick (N. J.), 824. In this case the action was by a company manufacturing tissue paper, which requires very pure water, against a mining company which polluted the water of the Walkill River, from which the paper mill secured its water, by pumping the drainage of its mine into the stream. An injunction was granted forbidding the mine from pumping its drainage into the river.

Legal Rules as to Right of Appropriation of Water in Streams for Mining and Irrigation in the Western States and Territories.

The rules furnished by the common law as to the rights of riparian owners have been subject to modifications in the Western States and Territories of the United States, where the contrary doctrine has arisen, that the first appropriator of water in streams passing through public lands acquires a prior right to the use of the same.

This, like the United States mining laws, only applies to land which was originally public domain. The leading case on the subject is *Atchison* vs. *Peterson*, 20 Wallace, 507, in which the opinion was written by Justice Field. As with other decisions of this able jurist, it is impossible to improve on his clear and accurate statement of the law. He says:

"By the custom which has obtained among miners in the Pacific States and Territories, where mining for the precious metals is had on the public lands of the United States, the first appropriator of mines, whether in placers, veins, or lodes, or of waters in the streams on such lands for mining purposes,

[14] *Sanderson* vs. *Pennsylvania Coal Co.*, 113 Pa. St., 126.

is held to have better right than others to work the mines or use the waters. The first appropriator who subjects the property to use, or takes the necessary steps for that purpose, is regarded, except as against the Government, as the source of title in all controversies relating to the property As respects the use of water for mining purposes, the doctrines of the common law declaratory of the rights of riparian owners were, at an early day, after the discovery of gold, found to be inapplicable or applicable only in a very limited extent to the necessities of miners, and inadequate to their protection. By the common law the riparian owner on a stream not navigable takes the land to the center of the stream, and such owner has the right to the use of the water flowing over the land as an incident to his estate. And as all such owners on the same stream have an equality of right to the use of the water, as it naturally flows, in quality, and without diminution in quantity, except so far as such diminution may be created by a reasonable use of the water for certain domestic, agricultural, or manufacturing purposes, there could not be, according to that law, any such diversion or use of the water by one owner as would work material detriment to any other owner below him. Nor could the water by one owner be so retarded in its flow as to be thrown back to the injury of another owner above him . . .

"This equality of right among all the proprietors on the same stream would have been incompatible with any extended diversion of the water by one proprietor, and its conveyance for mining purposes to points from which it could not be restored to the stream, but the Government being the sole proprietor of all the public lands, whether bordering on streams or otherwise, there was no occasion for the application of the common-law doctrine of riparian proprietorship with respect to the waters of those streams. The Government, by its silent acquiescence, assented to the general occupation of the public lands for mining, and, to encourage their free and unlimited use for that purpose, reserved such lands as were mineral from sale and the acquisition of title by settlement. And he who first connects his own labor with property thus situated and open to general exploration, does, in natural justice, acquire a better right to its use and enjoyment than others who have not given such labor. So the miners on the public lands throughout the Pacific States and Territories by their customs, usages, and regulations everywhere recognized the inherent justice of this principle; and the principle itself was at an early period recognized by legislation and enforced by the courts in those States and Territories . . .

"This doctrine of right by prior appropriation was recognized by the legislation of Congress in 1866. The act granting the right of way to ditch and canal owners over the public lands, and for other purposes, passed on the 26th of July of that year, in its ninth section declares 'that whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same.'

"The right to water by prior appropriation, thus recognized and established as the law of miners on the mineral lands of the public domain, is

limited in every case, in quantity and quality, by the uses for which the appropriation is made. A different use of the water subsequently does not affect the right; that is subject to the same limitations, whatever the use. The appropriation does not confer such an absolute right to the body of the water diverted that the owner can allow it, after its diversion, to run to waste and prevent others from using it for mining or other legitimate purposes; nor does it confer such a right that he can insist upon the flow of the water without deterioration in quality, where such deterioration does not defeat nor impair the uses to which the water is applied. . . .

"What diminution of quantity, or deterioration in quality, will constitute an invasion of the rights of the first appropriator will depend upon the special circumstances of each case, considered with reference to the uses to which the water is applied. A slight deterioration in quality might render the water unfit for drink or domestic purposes, whilst it would not sensibly impair its value for mining or irrigation. In all controversies, therefore, between him and parties subsequently claiming the water, the question for determination is necessarily whether his use and enjoyment of the water to the extent of his original appropriation have been impaired by the acts of the defendant. But whether, upon a petition or bill asserting that his prior rights have been thus invaded, a court of equity will interfere to restrain the acts of the party complained of, will depend upon the character and extent of the injury alleged, whether it be irremediable in its nature, whether an action at law would afford adequate remedy, whether the parties are able to respond for the damages resulting from the injury, and other considerations which ordinarily govern a court of equity in the exercise of its preventive process of injunction . . ."

In the case of *Union Mill Co.* vs. *Dangbegg*, 81 Fed., 73, the same question arose and the rule of prior appropriation is stated in the opinion as follows:

"The truth is that under the principles of the common law in relation to riparian rights, if applicable to our circumstances and conditions, there must be allowed to all, of that which is common, a reasonable use. But, if prior appropriation is to prevail, then different rules must be applied. Under the principles of prior appropriation, the law is well settled that the right to water flowing in the public streams may be acquired by an actual appropriation of the water for a beneficial use; that, if it is used for irrigation, the appropriator is only entitled to the amount of water that is necessary to irrigate his land, by making a reasonable use of the water; that the object had in view at the time of the appropriation and diversion of the water is to be considered in connection with the extent and right of appropriation; that, if the capacity of the flume, ditch, canal or other aqueduct, by means of which the water is conducted, is of greater capacity than is necessary to irrigate the lands of the appropriator, he will be restricted to the quantity of water needed for the purpose of irrigation, for watering his stock, and for domestic use; that the same rule applies to an appropriation made for any other beneficial use of purpose; that no person can, by virtue of his appropri-

ation, acquire a right to any more water than is necessary for the purpose of his appropriation; that if the water is used for the purpose of irrigating lands owned by the appropriator, the right is not confined to the amount of water used at the time the appropriation is made; that the appropriator is entitled, not only to his needs and necessities at that time, but to such other and further amount of water, within the capacity of his ditch, as would be required for the future improvement and extended cultivation of his lands, if the right is otherwise kept up; that the intention of the appropriator, his object and purpose in making the appropriation, his acts and conduct in regard thereto, the quantity and character of land owned by him, his necessities, ability, and surroundings, must be considered by the courts, in connection with the extent of his actual appropriation and use, in determining and defining his rights; that the mere act of commencing the construction of a ditch with the avowed intention of appropriating a given quantity of water from a stream gives no right to the water unless this purpose and intention are carried out by the reasonable, diligent, and effectual prosecution of the work to the final completion of the ditch, and diversion of the water to some beneficial use; that the rights acquired by the appropriator must be exercised with reference to the general condition of the country and the necessities of the community, and measured in its extent by the actual needs of the particular purpose for which the appropriation is made, and not for the purpose of obtaining a monopoly of the water, so as to prevent its use for a beneficial purpose by other persons; that the diversion of the water ripens into a valid appropriation only where it is utilized by the appropriator for a beneficial use; that the surplus or waste water of a stream may be appropriated, subject to the rights of prior appropriators, and such an appropriator is entitled to use all such waters; that, in controversies between prior and subsequent appropriators of water, the question generally is whether the use and enjoyment of the water for the purposes to which the water is applied by the prior appropriator have been in any manner impaired by the acts of the subsequent appropriator."

These rights of appropriation of water in streams by the first user for mining, irrigation, etc., are recognized in secs. 2339 and 2340 of the Revised Statutes, given in the Appendix. But rights by appropriation cannot be acquired in percolating water.[15] In most of the Western States and Territories statutes have been enacted defining water-rights and procedure for obtaining the same for mining, irrigation, etc. These will be found in the Appendix under the names of the various States and Territories.

Subterranean Waters

When subterranean water flows in a definite stream underground the rule in relation thereto is the same as the common-law

[15] *Cardelli* vs. *Comstock Tunnel Co.*, 26 Nev., 284; *Crescent, etc., Co.* vs. *Silver King, etc., Co.*, 17 Utah, 444, 70 Am. St. Rep., 810.

rule relating to surface streams. It cannot be entirely used or diverted by the owner of the land through which it passes. Such owner must allow the water to pass onward for the use of the land-owners below, subject to such reasonable and ordinary use for his own purposes as may be necessary.[16] But waters which come to the surface in the form of springs, etc., are presumed to be the results of ordinary percolations and not subject to the above rules, unless it is affirmatively shown to flow in well-defined channels under ground.[17]

Where the water is percolating underground without any definite channel or in unknown channels, or is simply resting stationary in the strata as an underground pool, then the water belongs with the land under the surface of which it is found, the same as any other mineral, and the owner of the land may appropriate it wholly to his own use, by means of wells or otherwise.[18] In a leading case in relation to water, *Ellis* vs. *Duncan et al.*, 21 Barbour (N. Y.), 230, the court says:

"The question involved in this controversy, whether the owner of a farm may dig a ditch to drain his land, or open and work a quarry upon it, when by doing so he intercepts one of the underground sources of a spring on his neighbors' lands . . . In the interruption of a surface current, the injury from a diminution of the water would seem to be palpable, and so far direct that it would originate a valid cause of action . . . But it is different when the principal stream is partially supplied by underground currents. The owners of the surface soil are not generally aware of their existence and cannot be supposed to have voluntarily acquiesced in any appropriation of them. When they purchase they are ignorant of any obstacle to the free use of their property *ab center ad cœlum* and to arrest some valuable improvement, such as digging a well or cellar, draining the land, taking valuable stones from a quarry, or leveling the ground for building or agricultural purposes, because it would cause some consequential, unforseen, and possible irremediable damage to another, would seem to be unreasonable and unjust."

In a later case, also, the Pennsylvania court says [19]:

"Mining must interfere more or less with those subterranean streams

[16] Gould on Waters, sec. 281, and citations there given.

[17] *Hanson* vs. *McCue*, 42 Cal., 303; *Swett* vs. *Cutt*, 50 N. H., 439; *Metcalf* vs. *Nelson*, 8 S. D., 87, 65 N. W., 911.

[18] *Frazier* vs. *Brown*, 12 O. St., 294; *Chatfield* vs. *Williams*, 28 Vt., 49; *Gould* vs. *Eaton*, 111 Calif., 639, 117 Calif., 541, 124 Calif., 635, 125 Calif., 450; *Wadsworth* vs. *Tillottson*, 15 Conn., 366; *Warden* vs. *City of Springfield*, 9 O. Decis., 855; *Taylor* vs. *Welch*, 6 Ore., 198; *Cole Silver Min. Co.* vs. *Virginia Gold Hill Water Co.*, Fed. Cas., 2,989, 1 Sawyer, 470; *Alexander* vs. *U. S.*, 25 Ct. Cl., 87; *New Albany & S. R. Co.* vs. *Peterson*, 14 Ind., 112; *Chase* vs. *Silverstone*, 62 Me., 175; *Acton* vs. *Blumenthal*, 12 M. and W., 324; *Chasemore* vs. *Richards*, 7 H. L. C., 349.

[19] *Coleman* vs. *Chadwick*, 80 Pa. St., 81.

and percolations of water which appear on the surface as springs; to say that the owner of the substrata shall be accountable in damages for their disturbance, is to say that he shall have no use whatever of his minerals, for, without interefering to some extent with such waters mining is impossible."

In the latest cases, however, a marked tendency has developed to qualify, to some extent, the absolute right of a landowner to make any use of the percolating water beneath his surface that he sees fit. These cases seem to limit such uses to the ordinary operations of agriculture, mining, domestic use, or improvements, either public or private.

The case of *Smith* vs. *City of Brooklyn*, 18 N. Y. App. Div. 340, which is affirmed in 160 N. Y., 357, was a suit for damages resulting from the disappearance of a small stream and a pond formed by damming such stream. This disappearance was caused by the construction by the city of Brooklyn of a conduit 2400 ft. distant, from which pumps drew water for the supply of Brooklyn. The soil of this part of Long Island is a glacial deposit of sand and gravel very porous in its nature, so that the water supply of Brooklyn is derived from wells, and tunnels which take the water from this formation.

The decision in the case in the appellate division contains an elaborate review of the English and American decisions on this subject. It was held that Brooklyn was liable for damages, but the higher court apparently placed its reasons for affirming the opinion of the appellate division on the ground that the effect of the acts of the city was the diversion of a *stream*, rather than on the ground of a direct modification or denial of the right of the landowner to make such use as he wished of the percolating water.

"That the diversion and diminution of the stream were caused by arresting and collecting the underground waters, which, percolating through the earth, fed the stream, does not affect the question. When the fact was established upon the proofs that the defendant's works and wells had caused, by this subsidence of waters, a diversion of the stream's natural flow in its channel the injury was proved and the plaintiff's cause of action established. Whatever may be the rule with respect to the right of a landowner to use, for any of his purposes, the waters percolating through the earth, and, thereby, to affect the sources of wells or springs upon his neighbor's land, the question is not one which is suggested by the present case. It is one thing to divert and diminish the natural flow of a surface stream, by preventing its usual and natural supply, or by causing, through suction or

other methods a subsidence of its water; it may be another thing to collect and use the waters which percolate through the earth in underground ways and channels without having connection with the supply of a surface stream. The latter question does not demand an answer upon the case before us."

In a subsequent case, however, involving the same question, the appellate court squarely decided that the collection of water from very permeable strata by pumping or other appliances, and selling the water so obtained, was unlawful, although no stream or surface body of water was diverted or diminished thereby.[20] The court says:

"The defendant makes merchandise of the large quantities of water which it draws from the wells that it has sunk upon its two acres of land. The plaintiff does not complain that any surface stream or pond or body of water upon his own land is affected thereby, but does complain and in courts below have found that the defendant exhausts his land of its accustomed and natural supply of underground or sub-surface water, and thus prevents him from growing upon it the crops to which the land was and is peculiarly adapted, or destroys such crops after they are grown or partly grown.

"The defendant does not take from his own land simply its natural or accustomed supply or holding, but by means of its appliances and operations it takes and appropriates a large part of the natural and accustomed supply or holding of the plaintiff's land. The case is not one in which, because the percolation and course of the sub-surface waters are unobservable from the surface, they are unknown, and thus so far speculative and conjectural as to be incapable of proof or judicial ascertainment.

"Before the defendant constructed its wells and pumping stations, it ascertained, at least to a business certainty, that such was the percolation and underground flow or situation of the water in its own and plaintiff's land that it could by these wells and appliances cause or compel the water in the plaintiff's land to flow into its own wells, and thus could deprive the plaintiff of his natural supply of underground water . . .

"In the cases in which the lawfulness of interference with percolating waters has been upheld, either the reasonableness of the acts resulting in the interference, or the unreasonableness of imposing an unnecessary restriction upon the owner's dominion of his own land, has been recognized.

"In the absence of contract or enactment, whatever it is reasonable for the owner to do with his sub-surface water, regard being had to the definite rights of others, he may do. He may make the most of it that he reasonably can. It is not unreasonable, so far as it is now apparent to us, that he should dig wells and take therefrom all the water that he needs in order to gain the fullest enjoyment and usefulness of his land as land, either for purpose of pleasure, abode, productiveness of soil, trade, manufacture, or for what-

[20] *Forbell* vs. *City of New York*, 164 N. Y., 522.

ever else the land as land may serve. He may consume it, but must not discharge it to the injury of others. But to fit it up with wells and pumps of such pervasive and potential reach that from their base the defendant can tap the water stored in the plaintiff's land, and in all the region thereabout, and lead it to his own land, and by merchandising it prevent its return, is, however reasonable it may appear to the defendant and its customers, unreasonable as to the plaintiff and the others whose lands are thus clandestinely sapped, and their value impaired."

These cases mark the limit to which the courts have gone in qualifying the doctrine of the rights of owners of land to the percolating waters therein; but they are equitable and just in principle, and will probably be followed in other jurisdictions under similar circumstances. In regard to the use of natural gas a very similar rule has been applied by the courts.[21]

Any person polluting percolating underground water, as by refuse from gas works, privy vaults, or salt water, is liable therefor, and such pollution may be stopped by injunction.[22]

The case of *Collins* vs. *Chartiers, etc., Co.*, 139 Pa. St., 111, was a suit for damages to percolating water by drilling gas wells, by which salt water at greater depth was allowed to rise and spoil the water above for domestic purposes. The evidence showed that such contamination could be prevented by "casing" through the fresh water-bearing stratum at a reasonable cost. The court says:

"The evidence shows that the geological formation in that neighborhood is sufficiently uniform so that veins of fresh water are encountered at about the same relative depth from the surface, and veins of salt water at a tolerably uniform distance below the fresh water . . .

"The defendant began the work of drilling the well complained of, with full knowledge of the general geological formation, and with ample practical experience in the management of the water veins; but while the company shut the water out of its own well it did not separate the salt from the fresh but left it to mingle with the fresh and to flow through the fresh-water veins into the wells in the neighborhood, and destroy them."

It was held that the company was liable for damages occasioned by the salt water.

Ice

Water, when solidified into ice, is as much a part of the earth's crust as any other solid stratum, but, owing to its temporary

[21] See also, *Wills* vs. *City of Perry*, 92 Iowa, 297, 60 N. W., 727, 26 L. R. H., 124; *Cole, etc., Co.* vs. *Virginia, etc., Co.*, Fed. Cas., 2989, 1 Sawyer, 670.

[22] *Brown* vs. *Illis.*, 27 Conn., 84; *Illiff* vs. *School Director*, 45 Ill. App., 419; *Kinnard* vs. *Standard Oil Co.*, 89 Kentucky, 468; *Woodward* vs. *Aborn*, 35 Me., 271.

nature and peculiar location, it is subject to peculiar legal rules, much the same as those governing water.

Ice on public waters is common property, and every one can make a reasonable use of the same. The riparian owners on navigable streams have no right to the ice which forms on the water adjacent to their banks superior to that of the general public. But if the bed of a fresh-water navigable stream belongs to the riparian owner the ice formed on the stream also belongs to him as an accretion.

Ice formed on a private fresh-water stream or lake belongs exclusively to the riparian proprietor so far as formed over his land.[23] In Indiana and Illinois, ice formed on private waters is held to be real estate.[24]

[23] Gould on Waters, sec. 19.

[24] *State* vs. *Pottmeyer*, 33 Ind., 402, 30 Ind., 287; *Washington Ice Co.* vs. *Shortall*, 101 Ill., 46.

XIX

Miscellaneous instances of the use of geology in the law and industries; tracing old obliterated boundaries; phosphate deposits in France; islands; building stone; accretion, reliction and avulsion.

Geology Used in Locating Old Obliterated Boundaries

A GOOD example of the use of stratigraphic geology in locating old, obliterated boundaries is furnished by the case of *Summerfield* vs. *Norton*, tried in the Supreme Court of New York for Queens County (Long Island), January, 1906.[1]

The property in dispute is located on the southwestern shore of Long Island and described legally as the west 132 ft. of lot No. 6 of the eastern division of a tract of land comprising both beach and swamp or salt marsh land which in 1809 belonged to John Cornwell and William Cornwell. In that year there was a partition proceeding by which the beach portion of the property was divided into two parts. The western part was subdivided into lots numbered 1 to 16, inclusive, and the eastern into lots 1 to 15, as shown on the map. These lots were all described, beginning with lot 1 of the western portion, as being bounded on one side by the adjacent lot and a certain number of yards wide. The original base line was marked out, it is said, by a tree and stakes on the west side of lot 1. The lots also were originally staked out, but during the lapse of a century the stakes and all other monuments had disappeared. The area being a practically uninhabited swamp and strip of sand beach, the location of the various lots became very uncertain. But when the beach developed into the fashionable summer resort of Rockaway it became immensely valuable; and after considerable preliminary litigation the above suit was begun, which, being in ejectment, squarely presented the question of the ownership of the land.

[1] The Supreme Court of New York is a *nisi prius* or trial court of original jurisdiction. The highest court of New York is called the Appellate Court. I am indebted to Mr. Charles S. Noyes, counsel in this case, for a statement of the legal points involved and to Professor Grabau for an outline of the geological evidence.

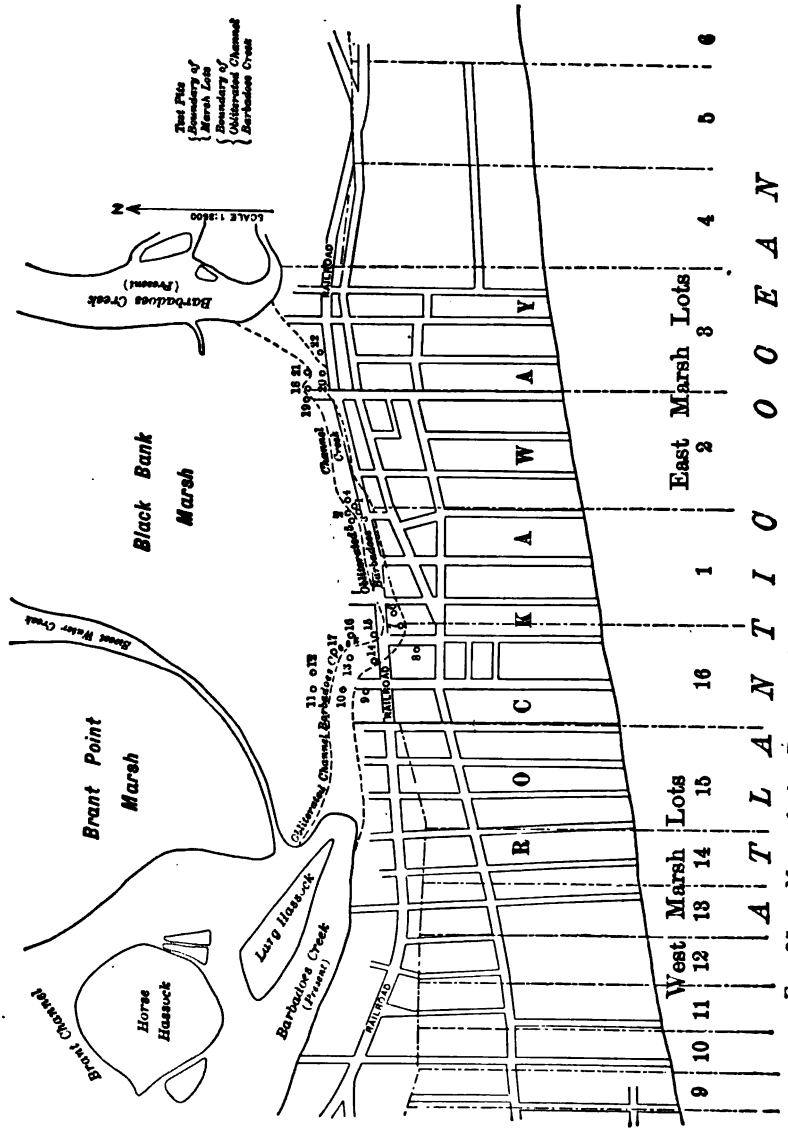


FIG. 95. — Map of the Premises Involved in the Case of *Summerfield* vs. *Norton*
From a map used in the trial of the case.

It was wholly a question of the location of the lot in question. The chain of the plaintiff's title was complete and undisputed, but the defendant insisted that the tract of land claimed by the plaintiff was 3000 ft. west of the location fixed by the plaintiff.

Among other evidence tending to fix the location of all the lots was the fact that in the original description of the lots numbers 3 to 15 of the western division they were mentioned as being bounded on the north by marsh lot number 1, and this in turn by Barbadoes creek; and lots 16 of the western division and 1, 2, and 3 of the eastern division were described as being immediately bounded on the north by Barbadoes creek. The location of the above lots would fix the location of lot No. 6 which was in dispute; so that the location of this old creek became a very important matter in the determination of the suit.

Barbadoes creek, as shown on the map, was only a small tidal channel in a seashore marsh such as are usually found in these situations. During the century it had been filled up and obliterated by the action of water and wind, washing and drifting sand from the exposed beach, except at the two ends, and the easterly end was claimed to be only an inlet from the bay having no connection with the former Barbadoes Creek. Its former existence was proved by old maps and documents and tradition, but more definite evidence of its existence and location was very desirable. To supply this evidence the plaintiff called upon Amadeus W. Grabau, S. D., Professor of Paleontology in Columbia University, to locate the line of the old creek by geologic evidence.

According to Professor Grabau's testimony, an examination of the district between the two present Barbadoes creeks (see map) shows the existence of a depression extending from each toward the Long Island railroad tracks. These depressions were marshy, with *Modiola plicatula* and other marsh mollusks still living in parts which are daily submerged by the tides. A series of test pits were next dug, from 4 to 6 ft. deep, at right angles across the channel indicated by the depressions and the marshy tract. It was found that certain of these pits showed only pure white sand below the thin layer of modern surface peat. This sand extended below the depth of the pit, the mouth of which was near high-water line. The sand from these pits, when examined under the microscope, showed only pure quartz, with the grains rounded and with a ground surface, and the size of the grains nearly uniform. Such characteristics point to a wind-blown origin of these sands; and they can therefore confidently be regarded as sand-dune material blown or washed into the

area now occupied by them. In many of the holes showing this sand the thin threads of the common eel-grass (*Zostera marina*) were found, either in a slightly matted condition or still penetrating the sand vertically in the manner in which they grew; thus showing that the sand settled down among and buried the growing eel-grass. The fact that these grasses showed no decay or carbonization indicates that their burial was not long ago. Eel-grass is known to perish if completely uncovered at low tide; hence, the occurrence of this plant showed that the region now filled in by these sands was a former tidal waterway.

Test pits, dug to the north of the area, showing these sands, invariably revealed the occurrence of a 1-ft. or 2-ft. layer of ancient, much matted, and much decayed peat at a depth of from 2 to 4 ft. below the surface. Below this ancient peat occurred sands highly impregnated with carbonaceous matter so that they had a nearly black color and emitted a strong odor of hydrogen sulphide. Examination under the microscope showed this sand to be ill-assorted quartz grains of many sizes, mostly not wind-worn and such as is carried by tidal currents. The carbonaceous character is due to the decay of the enclosed eel-grass, which is no longer recognizable as such. These characters indicate a much greater age of these deposits than is shown by the sand still inclosing the eel-grass. They also seem to indicate that there had been a slight subsidence of the coast in the past, since the ancient peat was found at a lower level than the modern peat.

By means of these test pits the northern shore of the former Barbadoes creek was accurately located. The southern shore, being formed by the sand dunes of the beach, is not so definite as the northern one. Some peat was found in the pits south of the old channel, and considerably more eel-grass. These pits show the average width of the buried channel to have been about 100 ft.

This definite evidence of the former existence of the old channel of Barbadoes creek must have had much weight with the jury in fixing the location of the lots, for their verdict was for the plaintiff, who claimed that the creek was located at the place indicated in Professor Grabau's testimony.

A further interesting case involving the application of geological principles to the determination of real estate litigation is *Skelly* vs. *Jones*, tried Feb. 3 and 4, 1902, before Judge D. Cady

Herrick in the Supreme Court of New York County. The issues involved in the case and the geological evidence used were as follows:

"Under the Dongan and Montgomery charters from the Crown of England, title to the lands between high- and low-water marks was vested in the municipality of the City of New York. The Kips Bay Brewery is located on First Ave., between 37th and 38th streets, running down to the East River. The plaintiff, Patrick Skelly, purchased the property from one Bernheimer. Bernheimer had filled out his land between high- and low-water marks, and built a stone dike at the point of low-water mark. From there on he carried out a dock. The City brought suit to eject Bernheimer from the land between high- and low-water marks and from the dock that he had built out from high- and low-water marks. The action came on for trial at a trial term of the supreme court and resulted in an agreement between the City and Bernheimer's counsel for the direction of a verdict in favor of Bernheimer for the land between original high- and low-water marks and in favor of the City for the land under water beyond low-water mark. As Skelly bought from Bernheimer he was entitled to all the land between high- and low-water marks covered by this judgment. The defendant in the action of *Skelly* vs. *Jones* was in possession of a part of this land. It was incumbent upon the part of the plaintiff to prove in the case that the land that defendant had taken possession of was the land between high- and low-water marks. There was some evidence to this effect from the testimony of an old surveyor who had been on the original Government survey of the harbor; but what was probably the most weighty evidence was furnished by Dr. D. W. Johnson. He went to the land in dispute and made diggings at the original low-water line and the original high-water line at three different points. Upon doing this he struck the beach.

"The difference between the filling and beach sand was apparent. The filling was composed of bricks, stones, and tin cans, and the sand was all angular. When the beach sand was reached, it was all rounded and contained no extraneous matter. Boulders were found, and on the boulders were the water-lines, distinctly marked. The boulders were dug down and when some distance below high-water mark, and between that and low-water mark and on the beach sand and by the boulders were found some small shell-fish (*Alexia and Skenea*), which Doctor Johnson testified only existed between high- and low-water marks because they required for life just so much air and so much immersion every day. While he was examining these holes they commenced to fill with water. He was convinced it was the percolation of the tide through the filling. When the water reached what he considered as the level, he had the surveyor run a line from that high-water line in the hole through the established bench mark or a standard maintained by the City about half a mile below this place and the two practically tallied, the difference being so small a fraction of an inch as to be of no moment.

"Thus we were able to prove mathematically, scientifically, and beyond question that the land we claimed was between high- and low-water marks." [2]

[2] From private communication from Edward W. S. Johnson, Esq., of Johnson & Johnson, Attorneys, New York.

Different geological principles were involved in a Massachusetts case which concerned the title to valuable land now under water but claimed by a certain company. The original grant, the source of title, was alleged to have been made in 1640, and it was claimed, on behalf of the company, that, since said date, the coast of Massachusetts has been sinking at the rate of one foot per century, thus carrying some of its land under the ocean.

Submerged land, by virtue of the legal rules outlined in chapter XVIII, belongs to the adjacent State. In the action, the company desired its title to the submerged lands confirmed on the ground that such land had been submerged by subsidence of the coast.

"The Commonwealth of Massachusetts opposed this claim on the ground that it was impossible for anyone to know that the rate of subsidence had been regular, and hence impossible to tell how much of the submerged land really did belong to the company.

"A careful study of the problem convinced me that the supposed rate was not certainly correct, and that it was almost certain that the rate had been so irregular as to make any conclusion based on that rate very unsafe. Other issues were involved in the case, and before it came to trial the company waived their claim based on the subsidence question. The rate of subsidence along the New Jersey coast has often been stated as two feet per century, but in the course of my investigation I found that the method of determining that rate was inaccurate, and that a more careful study seemed to prove, during the last fifty years at least, a period of quiescence for twenty-five years, then a rather rapid elevation for twenty-five years, showing the irregularity characteristic of all such movements."[25]

Legal and Industrial Applications of Stratigraphy, Petrology, etc.

Another example of the practical use of geology in the law is furnished by a suit between a hard-road contractor and the State of New York. The contractor had exhibited, as a sample of the rock to be used in a certain contract, a good limestone, and claimed that it came from a certain quarry near South Troy. The rock, however, that he used on the road proved to be only a shale and totally unfit for use as "road metal." On the trial Dr. Rudolph Rudeman identified the sample by means of a fossil shell in it (*Rafinesquina incrassata*) as belonging to the Ordovician

[25] From a private communication from Dr. D. W. Johnson of Harvard University.

age, which was not found at the quarry in question, so that a false sample had been used.

The principles of stratigraphy may sometimes be applied in litigation and mining; *e.g.*, prospecting for coal which is not found below the Carboniferous formations; for iron in the Lake Superior region found only in association with certain members of the pre-Cambrian; or in Arizona where the copper deposits in the Bisbee district are only found in association with carboniferous limestone. In the oil regions of Kansas, the oil and gas are found in beds of porous sandstone interstratified with Cherokee shales, these resting on Mississippi limestone of the lower Carboniferous. Consequently, well-drillers stop when the Mississippi limestone is struck; and beyond the line where the Cherokee shales or Mississippi limestone come to the surface there is no chance to find oil.

Spurr gives the following example: A French mining inspector, hearing of the discovery of deposits of phosphate of lime in certain geological formations in England, inferred from his knowledge of fossils that the same beds existed in France. He prospected in these and found phosphate of lime in commercial quantities. In litigation, fossils may be useful in identifying ore beds or adjacent strata and so proving ore deposits to be identical or otherwise.

Geology and petrology are sometimes necessary aids in the interpretation of contracts in which certain kinds of structural stone are specified. In a Georgia case the contract called for granite. The rock used had the crystalline appearance of granite, but when examined by a geological expert in thin sections under a petrographic microscope it showed that the crystals of mineral of which it was composed had suffered crushing and movement (metamorphism), and that consequently the rock was a gneiss instead of a granite, and so did not fulfil the terms of the contract.

Accretion

One of the most important geologic processes concerned in the formation of the strata of the earth's crust is the transportation and redeposition of decomposed and broken-down rock-material by moving water. This process is in active operation at the present time, cutting down the land in one place so that

it is covered by water, and adding to it in another place so that the surface covered by water is converted into dry land.

The legal rules governing the rights of property in relation to the changes made by the operations of these geologic processes are usually considered under the title of accretion whether the process is one of loss or gain of land area. As a matter of fact, however, nearly all the cases arise regarding rights to gains of land. There is no incentive under ordinary circumstances to litigate about what the "hungry waves" have eaten away. Still such cases have arisen.[3] The general rules of law with regard to accretion are well settled; for the cases in which it is applied, although not frequent as compared with the general mass of litigation, nevertheless occur from time to time in all the jurisdictions.

From the legal standpoint, accretion may be defined as the gradual and imperceptible increase and encroachment of the surface of the land on a water area adjacent thereto by reason of the deposit of sediment and earth by such water. The material added is termed in legal phraseology "alluvion."

The general rule is that all the gradual and imperceptible additions made by water to the land surface belong to the proprietor of the shore and become a part of the original tract of land for all purposes and held by the same title. But this only applies where the title to the land extends to the water's edge. If the boundaries are fixed by monuments, even though these are near the water-line, accretions do not belong to the adjacent proprietor.[4] Sometimes the total area added to riparian land is quite large. In the case of *Posey* vs. *James*, 75 Tenn. (7 Lea), 98, the accretion which had formed between the years 1866 and 1874 in the Mississippi River adjacent to a plantation amounted to between 200 and 300 acres, but it was nevertheless adjudged to belong to the shore proprietor.

The distinctive feature of the accretion, in the legal sense, is that the process is so slow as to be "imperceptible."

The United States Supreme Court gives the following definition of "imperceptible":

[3] *Welles* vs. *Bailey*, 55 Conn., 292; *Wallace* vs. *Driver*, 61 Ark., 429, 33 S. W., 641, 31 L. R. A., 317; *Cox* vs. *Arnold*, 129 Mo., 337, 31 S. W., 592, 50 Am. St. Rep., 480; *Fasler* vs. *Wright*, L. R., 4, C. D. P., 438.

[4] The law is so well settled as to this rule, and the cases are so numerous, that no attempt will be made to cite them. See Tiedeman, "Law of Real Property," secs. 685 *et seq.*; Washburn, "Real Property," secs. 1881–1885; Tiffany, "Real Property," pp. 1034 *et seq.*; "A and E. Encyclopedia," title, Accretions; Cyc, titles, Navigable Waters and Waters.

"The test as to what is gradual and imperceptible, in the sense of the rule, is, that though the witnesses may see from time to time what progress had been made, they could not perceive it while the process was going on." [5]

It was contended in the case of *Nebraska* vs. *Iowa*, 143 U. S., 359, that the principle of accretion ought not to apply to the Missouri River, because, owing to the loose nature of the soil and the rapidity of the current, the changes were extraordinarily rapid; but the court decided that this river was no exception to the general rule, saying:

"The Missouri River is a winding stream, coursing through a valley of varying width, the substratum of whose soil, a deposit of distant centuries, is largely of quicksand. In building the bridge of the Union Pacific Railway Company across the Missouri River, in the vicinity of the tracts in controversy, the builders went down to the solid rock, sixty-five feet below the surface, and there found a pine log a foot and a half in diameter — of course, a deposit made in the long ago. The current is rapid, far above the average of ordinary rivers; and by reason of the snows in the mountains there are two well-known rises in the volume of its waters, known as the April and June rises. The large volume of water pouring down at the time of these rises, with the rapidity of its current, has great and rapid action upon the loose soil of its banks. Whenever it impinges with direct attack upon the bank at a bend of a stream, and that bank is of the loose sand obtaining in the valley of Missouri, it is not strange that the abrasion and washing away is rapid and great. Frequently, where above the loose substratum of sand there is a deposit of comparatively solid soil, the washing out of the underlying sand causes an instantaneous fall of quite a length and breadth of the superstratum of soil into the river; so that it may, in one sense of the term, be said that the diminution of the banks is not gradual and imperceptible, but sudden and visible. Notwithstanding this, two things must be borne in mind, familiar to all dwellers on the banks of the Missouri River, and disclosed by the testimony: that, while there may be an instantaneous and obvious dropping into the river of quite a portion of its banks, such portion is not carried down the stream as a solid and compact mass, but disintegrates and separates into particles of earth borne onward by the flowing water, and giving to the stream that color which, in the history of the country, has made it known as the 'muddy' Missouri; and, also, that while the disappearance, by reason of this process, of a mass of bank may be sudden and obvious, there is no transfer of such a solid body of earth to the opposite shore, or anything like an instantaneous and visible creation of a bank on that shore.

"The accretion, whatever may be the fact in respect to the diminution, is always gradual and by the imperceptible deposit of floating particles of earth. There is, except in such cases of avulsion as may be noticed hereafter, in all matter of increase of bank, always a mere gradual and imperceptible process. There is no heaping up at an instant, and while the eye rests upon

[5] *St. Clair* vs. *Lovingston*, 23 Wallace, 46.

the stream, of acres or rods on the forming side of the river. No engineering skill is sufficient to say where the earth in the bank washed away and disintegrating into the river finds its rest and abiding place. The falling bank has passed into the floating mass of earth and water, and the particles of earth may rest one or fifty miles below, and upon either shore. There is, no matter how rapid the process of subtraction or addition, no detachment of earth from the one side and deposit of the same upon the other. The only thing which distinguishes this river from other streams, in the matter of accretion, is in the rapidity of the change caused by the velocity of the current; and this in itself, in the very nature of things, works no change in the principle underlying the rule of law in respect thereto.

"Our conclusions are that, notwithstanding the rapidity of the changes in the course of the channel, and the washing from the one side and on to the other, the law of accretion controls on the Missouri River, as elsewhere; and that not only in respect to the rights of individual land-owners, but also in respect to the boundary lines between States. The boundary, therefore, between Iowa and Nebraska is a varying line, so far as affected by these changes of diminution and accretion in the mere washing of the waters of the stream."

The same contention was made in the case of *Denny* vs. *Cotton*, 3 Tex. Civ. App., 634, 22 S. W., 122. The land, in this instance, was on the bank of the Rio Grande, and the court says:

"The facts show that the Rio Grande is subject to annual rises that occur in the spring and summer of each year, and that continue for two or three months; that during the stage of high water it is a violent, swift, and turbid stream; that the bank of the river on the south side, in the Republic of Mexico, opposite the land in controversy, is higher than on the north side of the river. That the force of the current strikes the south bank, and that during the period in which the accretion has been going on, as shown to exist in this case, the bank during each rise would cave in and wash away, and the channel of the river would move toward the south after each rise, and land would form on the north side; that that formation and change were noticed and discerned after each rise; some years the changes resulting from the rises in the river were greater than at other years. And that occasionally the progress and change made by the force of the current could be noticed while it was going on. But the evidence, as a whole, shows that the general effect produced by these annual rises in the river during the period 1858 to 1887 was the cause of the accretion and addition to the soil on the north side of the river, and was not the result of sudden changes."

On the authority of the case of *Nebraska* vs. *Iowa*, *supra*, the court decides that the gain is an accretion and belongs to the adjacent proprietor, in spite of the unusual character of the stream and of the changes to which it is subject.

If a riparian proprietor's land is washed away by the water

and afterward land is re-formed within his previous boundaries but unconnected with the shore, he has no right to such new land.[6]

The slow and gradual recession of the water from the land by which it is left dry is called in law, "reliction" and is regulated by the same principles as alluvion; the receding of the water must be slow and imperceptible. This, of course, would include both the sinking and the drying up of the water, or the raising of the land by slow geologic processes such as are to-day in progress in certain places.

Islands which form in navigable waters belong to the public; for the adjacent proprietor only owns to the high-water mark. In non-navigable waters, where the adjacent proprietor owns the land to the thread of the stream, the island belongs to the proprietor on whose land it is found. If it is located on both sides of the former thread of the stream it belongs to both proprietors, the division line being that occupied previously by the thread of the stream.[7] If a sudden change (called "avulsion") occurs in the course of the stream by which a portion of the land is cut off, as where a river cuts across an "ox-bow," the title to the part cut off is not changed.

It is stated that the reason for the allowance of the right of accretion is an award to the shore owner as a compensation for the danger to which he is exposed of having his land washed away by the water [8]; but probably the real reason is to be found in considerations of convenience and public policy.

The United States Supreme Court, in *New Orleans* vs. *United States*, 10 Peters, 662 (717), says:

"The question is well settled at common law, that the person whose land is bounded by a stream of water, which changes its course gradually by alluvial formations shall still hold by the same boundary including the accumulated soil. No other rule can be applied on just principles. Every proprietor whose land is thus bounded, is subject to loss, by the same means which may add to his territory: and as he is without remedy for his loss, in this way, he cannot be held accountable for his gain."

But soil or alluvion is not the only thing transported from

[6] *Wallace* vs. *Driver*, 61 Ark., 429 (432); *St. Louis* vs. *Rutz*, 138 U. S., 226 (245); *Wells* vs. *Bailey*, 55 Conn., 292.

[7] Tiedeman, "Real Property," sec. 687; Tiffany, "Real Property," p. 1038, Washburn, 'Real Property," secs. 1882, 1883, *Mulrey* vs. *Norton*, 100 N. Y., 424.

[8] *Banks* vs. *Ogden*, 2 Wallace, 57; *Lovingston* vs. *St. Clair Co.*, 64 Ill., 54, 23 Wallace, 68; *Delachaise* vs. *Maginness*, 44 La. Ann., 1,043.

one place and lodged on the land of another by water. This often happens to logs and timber. In a New York case [9] logs were carried by a flood and lodged on the land of another person. It was decided that the owner of the logs might elect to abandon them, in which case he was not liable and they became the property of the party on whose land they were thrown; or the owner might reclaim them, and take them away, in which case, however, he is liable for the damages occasioned by the logs to the land. In a Canadian case [10] the defendants gathered stones and other material collected about a culvert for the purpose of repairing the same, but before such material could be used, a violent storm arose, and washed the stones, etc., into a raceway belonging to the plaintiffs. It was held that the defendants were not liable for any damages occasioned by such material being carried into the raceway. The elements carried the stones on plaintiff's property and did thereby the damage complained of; and it was not incumbent on the defendants to remove the stones, nor were they liable for any damages occasioned by the same.

[9] *Sheldon* vs. *Sherman*, 42 N. Y., 484.
[10] *Snook et al.* vs. *Town Council of Brookfield*, 14 Upper Canada, Q. B., 255.

XX

Further miscellaneous instances of the application of geological principles and processes in law; lateral and sub-adjacent support; asphalt; gases in mines, — ventilation; mining partnership; "salting."

Lateral and Sub-adjacent Support

ANOTHER branch of real estate law which directly deals with geologic features and is liable to demand attention from engineers and geologists is the right of a landowner to have his surface and the strata beneath it supported as they are originally in the state of nature by the strata adjacent to or beneath his property. This in law is termed, "right of lateral and sub-adjacent support."

The general rule is that the landowner has an absolute right to have his land, in its natural state, supported by the adjacent land. This is not an easement, but is an incident annexed to the soil, and passes with the land. Consequently, the owner of the land cannot excavate it so as to deprive the adjacent land of its proper support. The right of lateral support only extends to land in its natural condition, and not when burdened with buildings. Right of lateral support for burdened land can only be gained in the United States by a grant, express or implied. Such grant is implied where land partly covered by a building is severed by sale. The part of the land carrying the building possesses an implied grant of the right of lateral support in the soil of the other portion of original tract. Also where land is sold for the purpose of locating valuable buildings thereon, a grant of the right of lateral support will be implied. The right of lateral support does not extend to ground located for hydraulic mining. Such a case arose in *Hendricks* vs. *Spring Valley, etc., Co.*, 58 Calif., 190, in which the defendant, working a "deep digging" by the hydraulic process, worked so near the line that some gravel caved from the plaintiff's land onto the defendant's land and was washed away with the other gravel. The court says:

"The question in the case is, whether the doctrine of lateral support applies to cases like the present. We think not. The very purpose of locating the ground both on the part of the plaintiff and the defendant was to tear it down and wash it away. Its only value consisted in the gold it contained. To apply the doctrine contended for by the appellant (right of lateral support) to ground of this character, would to a great extent defeat the very purpose for which it was located. Defendant would be liable for the amount of gold taken from the gravel that fell from the plaintiff's claim, but for the fact that its value was less than the necessary cost of extracting it."

Besides the right to lateral support a landowner has a right of vertical or sub-adjacent support for his surface. This is chiefly of importance in mining operations when the rights in the surface have been severed from the subsurface rights, and the different strata of mineral, etc., beneath the surface have become vested in different persons from those that own the surface. The general rule of law is that the surface proprietor has the right to the support of his land in its natural condition by the strata beneath, and that the proprietor of the subterranean strata must so work his mineral deposit as to leave sufficient support, either natural or artificial, to retain the land above undisturbed.[1] This is true if all the minerals beneath the surface have been granted to other parties.

An implied right of support to the surface passes therewith, or is retained therefor whenever such a grant is made. In order to deprive the surface proprietor of this implied right of sub-adjacent support, it is necessary that there should be express provision or words in the grant itself necessarily having such effect.[2]

In an English case [3] it was held that the owner of land has no right to the support of subterranean water, and that, although an adjacent owner, by making an excavation, drains away subterranean water so that a subsidence of the surface is caused

[1] *Victor, etc., Co.* vs. *Morning, etc., Co.*, 50 Mo. App., 525.

[2] *Yandes* vs. *Wright*, 66 Ind., 319, 32 Am. Rep., 109; *Western Indiana Coal Co.* vs. *Brown*, 74 N. E., 1027; *Livingston* vs. *Moingona Coal Co.*, 49 Iowa, 369, 31 Am. Rep., 150; *Michle* vs. *Douglass*, 75 Iowa, 78, 39 N. W., 198; *Erickson* vs. *Michigan, etc., Co.*, 50 Mich., 604, 16 N. W., 161; *Lords Exrs.* vs. *Corban, etc., Co.*, 38 N. J., Eq. (11 Stew.), 452; *Ryckman* vs. *Gillis*, 57 N. Y., 68, 15 Am. Rep., 464; *Burgner* vs. *Humphreys*, 41 Ohio State, 340; *Jones* vs. *Wagner*, 66 Pa St., 429, 5 Am. Rep., 385; *Horner* vs. *Watson*, 79 Pa. St., 242, 21 Am. Rep., 55; *Coleman* vs. *Chadwick*, 80 Pa. St., 81, 21 Am. Rep., 93; *Nelson* vs. *Hoch*, 41 Phila., 655; *Scranton* vs. *Phillips*, 94 Pa. St., 15; *Carlin* vs. *Campbell*, 101 Pa. St., 348, 47 Am. Rep., 722; *Barnes* vs. *Berwind*, 3 Penny, 140 (Pa. 1883); *Gumbert* vs. *Kilgore*, 6 Atl., 771; *Williams* vs. *Hay*, 120 Pa. St., 485, 14 Atl., 379, 6 Am St., 719; *McGowan* vs. *Bailey*, 155 Pa. St., 256, 25 Atl., 648; *Pringle* vs. *Vesta Coal Co.*, 172 Pa. St., 438.

[3] *Popplewell* vs. *Hodkinson*, L. R., 4 Ct, Exch. 247.

thereby, this will not make him liable for any damages occasioned by such subsidence.

The question as to liability for loss or impairment of lateral and sub-adjacent support by the flowing of quicksand beneath the surface into an adjacent excavation arose in a Massachusetts case.[4]

Sewer commissioners had contracted for the construction of a sewer. The strata consisted of about three feet of gravel filling upon about 10 ft. of peat and silt, below which was very fine sand and silt, or quicksand. The average depth of the sewer trench was 26 ft., and 14 ft. wide at the top, and 10 ft. wide on the bottom. In the quicksand there was a great deal of water. The water flowed into the trench, bringing with it a large amount of the quicksand, which was removed along with the water by pumping and by buckets. The surface of the premises by this means was deprived of its sub-adjacent and lateral support and cracked and settled, so that the buildings were injured. In deciding the case, the court says:

"Whatever may be true of percolating waters, we think that the defendants had no right to take away the soil of the plaintiff, in land which they had not taken under the statutes, and that it is immaterial that the soil was removed by means of pumps from the trench into which it had fallen by its own weight, or had been carried by percolating water.

"We are unable to distinguish the case from one where the soil falls in from the surface in consequence of an excavation in the adjoining land. The plaintiff, if the facts be as he offered to prove, has been deprived of the lateral support to his land, in consequence of which the quicksand has run from under the surface of his land into the trench, and has been removed by means of pumps, and this has caused the surface to settle and crack. It was the duty of the defendants to prevent this in some manner, if they did not take the plaintiff's land."

This decision appears to be the only one, in an American jurisdiction but is in accord with the general principles relating to the right to sub-adjacent and lateral support and will in all probability be followed in other jurisdictions whenever the question arises.

This conclusion is strengthened by the fact that later (1899) the same question arose in an English case,[5] and was decided in the same way.

[4] *Cabat* vs. *Kingman*, 166 Mass., 403.
[5] *Jordesan* vs. *Sutton, etc. Co.*, L. R., 1899, 2 Ch. Div., 217.

The suit was for damages from the subsidence of the surface caused by the digging of excavations for a gasometer. This penetrated a bed of "running silt," or quicksand, which flowed with the water therein contained into the excavation and was pumped out. The surface consequently settled and injured the houses standing thereon.

The case of *Cabat* vs. *Kingman, supra,* was cited as the only one directly in point, and following its precedent the English court decided that the gas company was liable for damages caused by subsidence resulting from the flowing of quicksand from underneath the land into an adjacent excavation.

Another English case, interesting from the standpoint of mining geology, arose on an appeal to the House of Lords from the Court of Appeals of the Island of Trinidad.[6]

At La Brea in the island of Trinidad is found a stratum of asphalt or pitch which in a few places appears at the surface but mostly lies at a depth of four to seven feet. So long as it is undisturbed it is solid and firm enough to support the soil above in its natural state. But if an excavation is made and the pitch cut through, the consequence is that the edge exposed to the heated atmosphere melts and the pitch oozes out. It may then be collected at the bottom of the pit or caught as it is exuding. As one witness expressed it: "Pitch bulges out and they shave it off each morning."

The defendants excavated their land to a depth of 12 ft., right up to the boundary line.

"The usual results followed; the section of the stratum of the pitch thus exposed to the atmosphere began to melt. The pitch oozed out, and the excavation yielded abundantly. Between two hundred and three hundred tons of pitch were 'won,' as the phrase goes. The surface of the plaintiff's land began to sink and crack. A depression was formed, in shape like half a saucer, about five feet deep in the center at the boundary line, and going back in a semicircle with a radius of about sixty feet. A series of cracks appeared on the surface, from eight to ten feet long, by six to eighteen inches wide, and some buildings or sheds of no great value were more or less wrecked."

It was contended in behalf of the defendants that the case was similar to that of a surface supported in position to some extent by subterranean water in which the common-law rule is that the surface has no right of sub-adjacent support by the sub-

[6] *The Trinidad Asphalt Co.* vs. *Ambard,* L. R., 1899, Appeal cases

terranean water so that there is no liability for subsidence caused by pumping out the water.[7]

But the court did not take this view, although they admitted that at certain temperatures the asphalt becomes liquid and behaves more or less like water or any other fluid. They held that the pitch was the peculiar product of the particular strip of land, and not like water dropping from the clouds on the face of the earth and percolating beneath in no definite channel, and which is no man's property until appropriated. Consequently, the plaintiffs were damaged in two ways: first, by the lowering of their surface; and, second, by loss of the pitch or asphalt which flowed therefrom. Damages were awarded and an injunction issued against future operations of the same kind.

Ventilation

In every State in which mining is an important industry there are a number of statutory rules and regulations for the conduct of mining operations. These are chiefly concerned with securing the health and safety of the men who work in the mines and form a part of what is known as "police regulations." The only important legal rules of this class that are directly connected with geologic features are those that concern the ventilation of mines. In a mine, as in any other inclosed space in which man and animals work and breathe, the air becomes vitiated thereby, and ventilation is necessary; but this is usually left to natural causes, unless the strata in which the mine is excavated or the mineral deposits being worked give off gases which rapidly vitiate the air or render it dangerous by a liability to explosion. The chief gases of this kind that are met within mines are the following:

Marsh gas or *methane*, CH_4. When mixed with air this is explosive. The mixture acquires explosive properties at the lowest limit when there is one part of marsh gas to five and one-half parts of air. The explosion increases in violence with the increase in proportion of air, reaching a maximum when the proportion is one of marsh gas to nine and one-half parts of air. It then diminishes, and at the proportion of 1: 14 liability to explosion ceases. Marsh gas is found in connection with coal deposits and is an occluded gas in all coal formations, although in many it has practically disappeared. It is a product of the

[7] See p. 310.

metamorphism of vegetable matter when air is excluded by water, superincumbent strata, etc. It issues from the pores, crevices, etc., of the coal itself, or it may have passed into the surrounding strata and, being under pressure therein, when an opening in the same is made in removing coal, it is given off into the workings. It is odorless, tasteless, and combustible, and when present in sufficient quantities rapidly diffuses through the air of the mine openings, forming the explosive mixtures mentioned above, which are called by the miners "firedamp."

Carbon monoxide, CO, is another gas sometimes present in mines. It is produced by an imperfect combustion when sufficient oxygen is not present to unite with the carbon of the fuel. It is produced in mines by the burning of coal in the gob, mine fires when insufficient oxygen is present for complete combustion, and in explosions of powder. It is very poisonous. It is also explosive. The explosive mixture ranges from one part of carbon monoxide to 6.7 parts of air for the lower limit to one part of carbon monoxide to 16 volumes of air for the upper limit. It is called "whitedamp" by the miners.

Carbon dioxide, CO_2, is produced by combustion, decomposition, and explosion, and its chief source is the coal in which it has been formed by slow processes of decomposition. It is much heavier than air, and accumulates like water in the lower parts of the mine workings. It may be detected by means of a lamp or candle, the flame of which is much reduced or entirely extinguished according to the amount present. It is called by the miners "chokedamp" or "blackdamp."

Sulphureted hydrogen, H_2S, is also produced by decomposition and is explosive and poisonous, but is rather infrequent in mines. It is called "stinkdamp," from its strong odor resembling rotten eggs.

Ethene or *olefiant gas*, C_2H_4, sometimes occurs, but is not important.

Even where there is no statute in relation to the ventilation of mines, it has been held that it is the duty of the employer to warn his employees of danger from gas or impure air in the same way that he is obliged to warn them of any other danger; and for a failure to do this he is held liable if injury should result therefrom.[8] On account of the great danger of explosions from

[8] White, "Mines and Mining Remedies," sec. 462; *Strahlendorf* vs. *Rosenthal* 30 Wis., 674; *Turner* vs. *Tunnel Co.*, 1 Am. Neg. Rep., 270; *Consolidated Co.* vs. *Scheeler*, 42 Ill. App., 619.

accumulated gases and of poison from impure air, the employer must use all means known to science to prevent or remove such causes of injury to his employees; and he is liable if he does not do so.[9] He must also give reasonable notice to third parties liable to be injured by these things.[10]

The laws concerning ventilation require certain amounts of air to be circulated through the workings for each man employed therein, usually 100 cu. ft. of air per minute. These statutes have been upheld by the courts in numerous cases as a legitimate exercise of the power of the State to make police regulations.[11]

The statutory regulations of the various States concerning ventilation are of course strictly local in application and usually quite detailed so that it is not necessary or advisable to attempt even an abstract of the same. They can usually be obtained in pamphlet form by addressing the State mine inspector.

Mining Partnership

One species of contract has different and peculiar rules when applied to mining than in any other business, so that special mention thereof is proper in a treatise on a mining law, namely, *mining partnership*, the rules of law applying to which are entirely different from those relating to an ordinary partnership. Mining partnerships originated in England, but have become firmly fixed in American jurisprudence. Their distinguishing feature is, that a sale of the interest or the death or the bankruptcy of one partner does not dissolve the partnership, but the purchaser or successor comes in and stands exactly in the place of his predecessor in interest. As such new partner may thus come in without the consent and against the wishes of the other members, there could be no presumption of confidence and no relation of trust between the members. Consequently no partner or manager can bind the partnership by any act without authority.[12] It is created where several owners of a mine unite and coöperate in working the same, and share the profits and losses. Its existence may be

[9] *Belville Stone Co.* vs. *Mooney*, 61 N. J. L., 253, 39 Atl., 764; *Muddy Valley Co.* vs. *Phillip*, 39 Ill. App., 376; *Musgrave* vs. *Coal Co.*, 110 Iowa, 169.

[10] *Ohio Co.* vs. *Fishburn*, 61 Ohio St., 608, 56 N. E., 457.

[11] *Deserant* vs. *Cerrillos Coal Co.*, 178 U. S., 409; *Slack* vs. *Jacob*, 8 W. Va., 612; *Munn* vs. *Illinois*, 94 U. S., 113.

[12] *Skillman* vs. *Lachman*, 23 Calif., 199; *Kahn* vs. *Smelting Co.*, 102 U. S., 641.

inferred from the acts of the parties and the circumstances.[13] It is said to have grown out of the "cost book" system formerly in vogue in England.[14]

Those having a majority in interest have power to decide as to carrying on the business and working the mine, if all cannot agree. Any partner can sell his interest at any time to any one. While mining partnership is a part of the common law of England, it seems to have had an independent origin in California, as an outgrowth of the conditions existing in the mining regions, rather than as the conscious adoption of the doctrine from the common law, although the details of its development have been guided by the applications of the same subject in the common law.

Salting

Salting is the fraudulent placing of mineral in or on a mine or mining property or in the ore derived therefrom with the intent of deceiving an intending purchaser or other person into the belief that such mineral exists in such property or ore in its natural state. Like any other fraud, it vitiates and renders null and void any agreement, contract, or right of any kind attempted to be founded thereon. In a Kentucky case[15] an oil well was "salted" by pouring several barrels of crude petroleum therein by the drillers. One of these sold his interest to other persons, and these, not having any knowledge of the fraud, conveyed to still another party. The last purchaser, learning of the fraud, sued to recover back his money; and it was held that the trade was made under a mutual mistake, and that the last purchaser was entitled to rescind and recover back his money on account of the "salting" having fraudulently led such purchaser to believe the well was valuable. In a number of the mining States there are statutory provisions making "salting" a criminal offense.

[13] *Skillman* vs. *Lochman*, 23 Calif., 199; *Settenbre* vs. *Putnam*, 30 Calif., 490; *Perkins* vs. *Peterson*, 29 Pac., 1135; *Manville* vs. *Parks*, 7 Colo., 128; *Mayher* vs. *Burke*, 29 Pac., 106.

[14] Collier on Mines, p. 93; Bainbridge on Mines, p. 157.

[15] *Rowland* vs. *Cox*, 89 S. W., 215.

XXI

Forms and procedure for locating mining claims; forfeiture of co-owners interest; conveyance of mining claims; forms for locating tunnel claims; forms for locating water rights.

[Chapters XXI and XXII were written for Mining, Mineral and Geological Law by Geo. D. Emery, Esq., Everett, Wash., of the Washington bar, author of "The Miners Manual," 1906.]

Forms for Locating Mining Claims

PRELIMINARY OR DISCOVERY NOTICE

WHERE a preliminary notice is required by statute, the provisions of such statute must be followed. In the absence of any statutory or other requirements the following form will answer:

Telluride Lode

The undersigned claims ____ days to sink discovery shaft and ____ days to record on this vein.

Dated this ____ day of ____ 19 .

John Doe, *Discoverer.*

This notice should be posted at the point of discovery.

FINAL OR LOCATION NOTICE

This notice may be written with pen and ink or pencil; it may be printed or it may be cut into the surface of a board, tree, or stake, or painted thereon, but it must contain certain essentials to give it force and protect the rights of the discoverer. It may be put inside an open tin can so conspicuously displayed as to attract attention and give information of its presence and contents. It must be posted at the point of discovery and on the property to which it relates. Each state has provided certain requirements regarding the contents and posting as well as the record of such notice, and the proper statute must be consulted

and carefully complied with. The following forms will be found sufficient in such cases.

NOTICE OF LOCATION OF THE

MINING CLAIM

NOTICE IS HEREBY GIVEN that the undersigned, having complied with all the requirements of the laws of the United States and the local laws, customs, and regulations, has this day of , A.D. 19 , discovered, located and claimed linear feet, horizontal measurement of, on and along the lode or vein of quartz or other rock in place bearing gold, silver, copper, lead, or other metals, with (300) feet of surface

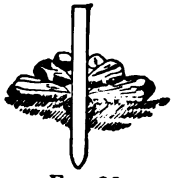


FIG. 96

FIG. 97

Good (96) and bad (97) stone and stake monuments.
From Stretch; Prospecting, Locating and Valuing Mines.

FIG. 98

FIG. 99

FIG. 100

Correct form of blaze on trees as witness mark, Figs. 98 and 99 and notice in the can, Fig. 100.
From Stretch; Prospecting, Locating and Valuing Mines.

ground on each side of the center of said vein; together with all dips, spurs, angles, and variations as allowed by law, and all veins, lodes, deposits, and ground within the lines of said claim; situated in the mining district, County of , State of . The course of said vein as nearly as can, at this time, be determined is and . This claim extends feet and feet from the discovery shaft, where this notice is posted, along the course of said vein. Said claim is more particularly described as follows:

WITNESSES:

_____ _____

_____ _____

_____ _____

Locators and Claimants.

The claim should be carefully described with reference to some mountain, stream, or natural object of general prominence, or, if possible, a corner of the United States survey, or some established "initial point." Thus:

"Located upon the southerly end of Bald Mountain, about 3500 feet northerly from the junction of Snake Creek with the Willamette River, about eight miles east of the village of , and more particularly described as follows: Commencing at the southerly center end, on the vein, a post marked 'S. center end'; running thence easterly 300 feet to the southeast corner, a post marked 'S. E. corner'; thence northerly 1500 feet to the northeast corner, a post marked 'N.E. corner'; thence westerly 300 feet to the northerly center end, a post marked 'N. center end'; thence westerly 300 feet to the northwest corner, a post marked 'N.W. corner'; thence southerly 1500 feet to the southwest corner, a post marked 'S.W. corner'; thence easterly 300 feet to the place of beginning.

"The discovery shaft and the post where this notice is posted is feet north from the south center end post.

"Posts are also set at the middle of each of the side lines, marked 'E. Side Post' and 'W. Side Post,' respectively. On each stake is plainly written the name of the claim, date of location, and name of locator."

Or thus:

"Thus discovery shaft where this notice is posted is situated 1,627 feet north, 20 degrees 32 minutes east, from Bald Mountain, Initial Point No. 1, as recorded in the office of the County Recorder of County, State of ," etc.

Or thus:

"The discovery shaft where this notice is posted is situated 1324 feet N. 21 minutes 7 seconds W. from the S.W. corner of Section 6, Township 12 N., Range 4 E., Willamette Meridian, according to government survey."

If absolute accuracy cannot be had, the language may be modified to conform to the facts, as, "about 1500 feet easterly from," etc.

This form must be changed to comply with the peculiar requirements of the statutes of California and South Dakota.

NOTICE OF LOCATION OF THE
PLACER CLAIM

NOTICE IS HEREBY GIVEN that the undersigned, having complied with all the requirements of law and the local rules and customs, has this day of A.D. 190 , located and claimed (twenty) acres of placer mining ground, more particularly described as follows:

This claim is to be known as placer claim.

WITNESSES:

_____ _____

_____ _____

_____ _____

Locators and Claimants.

The same care and particularity in describing the premises should be observed as in the case of lode claims. If on surveyed land, describe the claim, if practicable, by legal subdivisions. An exact copy of the notice should be retained for future use.

For the location of a mill-site for general mining and milling purposes in connection with a lode claim, the following form will suffice:

NOTICE OF LOCATION OF THE MILL-SITE

NOTICE IS HEREBY GIVEN that the undersigned, being the owner of the Lode Mining Claim, situated in Mining District, County of , State of , for the purposes of mining and working the ores of said claim and for general mining and milling purposes in connection therewith, does hereby locate and claim (5) acres of non-mineral ground, not contiguous to said claim, within said mining district, County and State, described as follows:

The (N.W.) corner of said mill-site, where this notice is posted, is situated about (2260) feet (S.E.) of the discovery shaft on said Lode Claim. Located and claimed and this notice posted this day of A.D. 190 .

_____

_____

Locator and Claimant.

In describing a mill-site use the same care as in the case of the lode claim, and be equally as particular to mark the corners. Side and end posts need not be set. The notice is usually posted on one of the corner posts. No work is required to be done upon the mill-site if the *claim* be properly *represented.*

For security, and that proof may be had when needed, it is best to post the notice in the presence of two disinterested persons, who should sign the notice as witnesses; that is, however, a mere precaution and is not essential to the validity of the notice.

The claim should be marked on the ground by posts or monuments at the corners, and in some States also at the centers of

the end and side lines. The post should be at least four inches square at the top, five and one-half feet long, and set one and one-half feet in the ground, and should have a monument of stone piled around it to the height of two and one-half feet, the pile being three feet or more in diameter at its base. Each post should be marked with the corner, name of the claim, date of discovery, and name of locator, thus:

N. E. Cor.
"EVERETT"
Jan. 2, 1906
WM. SMITH
Locator

The marking should be on the side of the post facing the discovery shaft. Trees should be marked, where practicable, near each corner, to establish its permanency and facilitate the finding of the corner post. Where the post cannot be set at the exact corner because of the character of the surface, it should be set as near the corner as practicable on the claim and marked "Witness Corner," with the distance and direction of the true corner indicated thereon.

Where stone corners are set, the monument should consist of a stone at least 6 in. in diameter and 18 in. in length set 12 in. in the ground, and the exact corner marked on the stone by a cross (X). A mound of rocks should be erected near the stone, as above described.

After posting the notice and marking the claim the work necessary to complete the discovery should at once be done. This varies in the different States; and the local statute must be, of course, complied with.

Having performed these essentials, the claimant must now record the notice or certificate of location. This is usually a duplicate of the notice posted at the point of discovery. In Oregon and Idaho the notice must have attached thereto and recorded therewith an affidavit of the claimant, or some one in his behalf, showing that the labor required by law to constitute a discovery has been performed. In Montana the declaratory statement or notice which is recorded must be verified by the

oath of the locator, or if a corporation, by some agent or officer authorized to act. In other States the notice is not required to be verified or acknowledged. The recorded notice should contain the name of the claim, the date of its discovery and location, the name of the locator, and a description of the claim by such reference to some natural object or permanent monument as will clearly locate and identify it. It should state how long the claim is, on the vein, each way from the discovery shaft, and how wide it is on each side of the center of the vein. The general course or strike of the vein should also be stated.

The time within which the notice must be recorded within the various States and Territories must be ascertained by consulting the statutes of the various States. See Appendix.

Any mistake in the recorded notice may be corrected by filing an amended notice which will relate back to the date of the original notice, if no rights of third parties have intervened.

A placer claim cannot exceed 20 acres for each individual, nor more than 160 acres in all. Where the land has been surveyed, the location should conform to the survey and the placer be described by the usual method of describing a legal subdivision, as, "the East half of the S. E. quarter of the S. E. quarter," etc. Stone, oil, and salt lands are located as placer claims and are subject to the laws governing same. Coal lands, however, are otherwise located.

Forfeiture of Co-owner's Interest

To hold a claim, whether lode or placer, $100 worth of work must be done or improvements made thereon each year until a patent has been secured therefor. The annual period within which said work must be done or improvements made, commences on the first day of January next succeeding the date of the location of the claim. Upon failure of one or more of the several co-owners to do his share of the annual work, or contribute proportionately the cost thereof, the owners who do the work or pay for same may, upon its completion, acquire the rights of the defaulting owner by giving the following notice:

Notice to Delinquent Co-Owner

To , his heirs and assigns:

You are hereby notified that during the year the undersigned have expended more than in labor and improvements upon

the Lode Mining Claim, in Mining District, County of , State of , in which mining location you claim an undivided interest, as shown by the notice of location thereof at page of Volume of the Mining Records of said County. The said labor was performed as and for the annual representation of said claim for the said year of , as required by the laws of the United States, concerning annual labor upon mining claims, and the same was the amount required to hold said claim for said year. You are further notified that unless within ninety days after the personal service of this notice upon you, or within ninety days after the publication thereof, you contribute your portion of such expenditure as a co-owner, to wit: the sum of , your interest in the claim will be forfeited to the undersigned co-owners who have made such expenditure, and will become their property in the manner provided by law.

Dated

The foregoing notice must be served in person upon the delinquent co-owner, or published in the newspaper nearest to the lode claim. If published in a daily paper, it must be published for ninety days, and if in a weekly, for thirteen weeks. The delinquent co-owner has ninety days after complete publication in which to contribute his portion. If he fails to do so, a copy of the notice of forfeiture should be filed for record.

The following affidavits should be attached to the notice and recorded:

PROOF OF PERSONAL SERVICE

County of SS
State of

, being first duly sworn, says: That he is personally acquainted with the delinquent co-owner to whom the foregoing notice is directed, and that on the day of A.D. 190 , in the County of , State of , he personally delivered a true copy of said notice and the whole thereof to said , co-owner aforesaid, and left the same with him.

Subscribed and sworn to, etc.

If the notice was served by publication the following form should be used:

PROOF OF PUBLICATION

State of SS
County of

, being first duly sworn, on oath says: That he is the publisher of the , a newspaper

published nearest the lode mining claim, described in the foregoing notice; that said notice was published in full in said newspaper for thirteen consecutive weeks beginning on the day of A.D. 190 , and ending on the day of A.D. 190, in each issue of said newspaper.

Subscribed and sworn to, etc.

In either case the following affidavit should be attached to and recorded with the notice:

PROOF OF DEFAULT

State of SS
County of

, and , being first duly sworn, on oath severally do say: That they are the co-owners of the lode mining claim described in the foregoing notice and are the same persons whose names are subscribed thereto. That the said , to whom said notice is directed, has wholly failed to perform any work or labor or to make any improvements upon said mining claim for the year or to pay or contribute to the undersigned any portion of the amount by them expended therefor, although more than ninety days have elapsed since the legal service upon him of the foregoing notice.

Subscribed and sworn to, etc.

There is no difference in the amount of annual work required between lode and placer claims. The amount or character of work must be such as tends to develop the claim.

As soon as the annual work is completed, proof thereof should be recorded in the proper office substantially in the following form:

PROOF OF LABOR ON THE MINING CLAIM

State of SS
County of

, being first duly sworn, says: That between the day of , 190 , and the day of , 190 , he did and performed labor, and made improvements upon the mining claim, situated in the Mining District, County of , State of , claimed and held by , the location notice of which is recorded in the office of the in and for County, State of , in Book of on page .

That such labor was done and improvements made for and at the cost

of said owner and claimant, as and for the annual expenditure on said claim for the year . That the same consisted in (state the nature and extent of the work and improvements) and was worth and of the value of $. That said claimant paid therefore the sum of $.

(If done upon one claim for the benefit of several, the affidavit should so state, viz.:

"This work also constitutes the annual expenditure upon and for (names of claims) mining claims, being claimed and occupied by the said claimant and contiguous to the claim first above described, and tends to improve and develop each and all said claims.")

Subscribed and sworn to before me this day of A.D. 190 .

Notary Public in and for State of County,

Conveyances of Mining Claims

Titles to unpatented mining claims may be conveyed by the locator or his grantee without the signature of his wife. A common quitclaim deed is the usual form of conveyance. The following form is in general use:

Mining Deed

of County of , State of in consideration of the sum of , the receipt of which is hereby acknowledged, hereby grants, bargains, sells, conveys and quitclaims unto of County of , State of the following described mining claim, situated in Mining District, County of State of , to wit:

Being the same claim the notice of location of which is recorded in the office of the of the County of , State of , in Book of on page .

To have and to hold the same together with all the ores and minerals, dips, spurs, and angles thereof, and all the rights thereunto pertaining, to him and his heirs and assigns forever.

Witness my hand and seal this day of A.D. 190 .

(Seal)

State of SS
County of

Be it Known that on the day of , A.D. 190 , before me personally came of County of , State of , to me known to be the signer and sealer of the foregoing instrument and the grantor named therein, and

acknowledged that he executed the same freely and voluntarily and for the uses and purposes therein expressed.

Given under my hand and official seal the day and year last above written.

Notary Public, State of
County of

A common form of mining lease is as follows:

MINING LEASE

, of , County of State of , as lessor, in consideration of the royalties, rents, and agreements hereinafter contained, does hereby grant, demise and let unto , of , County of , State of , the following described mine and the appurtenances thereunto pertaining, situate in the Mining District, County of , State of , to wit:

to have and to hold the same unto the said as lessee for the term of from the date hereof until noon of the day of , 190 , unless sooner terminated.

In consideration hereof the said lessee agrees as follows:

1st. To hold and work said mine and premises, according to law and the rules, and customs of miners and in a thorough and economical manner, so as to take out the greatest possible amount of ore, with due regard to the safety, development, and preservation of the property, as a workable mine from this date and during his possession under this lease.

2d. To work said mine and premises as aforesaid steadily and continuously during all of said term; to employ not less than persons steadily in such work, daily during all said term.

3d. To well and sufficiently timber said mine at all points, properly, in accordance with good mining, and to repair all old timbering wherever it is or may become necessary or requisite, to keep the mine in a safe and workable condition.

4th. To occupy, hold, and work all cross or parallel lodes, dips, spurs, feeders, angles, crevices, or mineral deposits of any kind which are or may be discovered in working hereunder, or in any tunnel or traverse run to intersect said lode or vein, by the lessee or his servants or grantees, in any manner at any point within feet of the center line of said lode, as the property of said lessor, with privilege to the lessee to work the same as an appurtenance of the demised premises, under this lease, during the term hereof, and not to locate or allow the same to be located, save in the name and for the use of the lessor. To duly and seasonably make and file for proper record, due proofs of annual work and labor as required by law, for the benefit of the lessor and to protect his title to the premises.

5th. To keep the drifts, shafts, tunnels, and other passages and workings of said premises at all times thoroughly drained and clear of loose rock, soil and rubbish of all kinds.

6th. Not to assign this lease or any interest thereunder, and not to sublet said premises in whole or in part, without the written consent of the lessor endorsed hereon, and not to allow any persons except said lessee and his workmen to take or hold possession of said premises or any part thereof.

7th. To pay and deliver to the lessor as royalty of all ore to be mined, raised, or taken from said permises during said term, of like assay as that retained by said lessee, delivered at as fast as mined, without deduction, charge or offset.

8th. To deliver up to the lessor or his assigns the said premises with appurtenances and all improvements, in good order and condition, with all shafts, tunnels, and other passages thoroughly clear of rubbish and drained, and the mine, in all points and particulars, ready for immediate continued working (accidents not arising from negligence alone excepted), without demand or notice, on the said date and hour of the termination of this lease, or at any time prior thereto upon demand for forfeiture.

9th. The lessor and his agents and servants may enter upon and into all parts of said mine and premises for the purpose of inspection, with use of all passages, ropes, windlasses, hoists, ladders, and appliances for such purposes, at all reasonable times.

10th. Upon the violation by the lessee or any person under of any agreement herein contained, the term of this lease shall at the option of the lessor or his assigns, expire and terminate, and the same and the premises aforesaid, with all appurtenances, shall become forfeit to the said lessor, his heirs or assigns, and the lessor, his agents, heirs or assigns, may thereupon, after demand of possession in writing, enter upon and take full possession of said premises and dispossess all persons occupying the same, with or without force, and with or without process of law; and all rights of the lessee in the premises shall cease and terminate upon such demand.

11th. Each and every clause and agreement herein contained shall extend to and bind the heirs, executors, administrators, and assigns of each and all parties hereto.

In witness whereof the said parties have hereunto set their hands and seals this day of , 19 .

In presence of us:

_____ _____ (Seal)

_____ *Lessor.*

_____ (Seal)

Lessee.

(The usual form of acknowledgment should be attached.)

The possessory right for a term with the privilege of paying for and purchasing the title is sometimes conveyed by the following bond for title:

BOND FOR TITLE

KNOW ALL MEN BY THESE PRESENTS; that I, , of the City of , State of , party of the first

part, am held and firmly bound unto , of the County of , State of , party of the second part, in the penal sum of Dollars, lawful money of the United States, for the payment of which I hereby bind myself, my heirs, executors, and administrators.

Sealed with my seal and dated this day of A.D. 19 .

THE CONDITION of this obligation is such that whereas, the above bounden party of the first part, in consideration of the promises, payments, and conditions hereinafter set forth to be kept, paid and performed by the party of the second part, has agreed to sell and convey unto the said party of the second part all his right, title and interest in and to the following described mine and mining property, situated in the Mining District, County of , State of , to wit:

together with all and singular the improvements and appurtenances thereunto belonging, for the sum of Dollars, to be paid by the party of the second part unto the party of the first part at the times and in the manner following, viz: . Which sums are to be paid to the said party of the first part in person, or by depositing the same to his credit in the bank of at the several times aforesaid, in lawful money of these United States, time being of the essence of these conditions; and in case the said party of the second part or his assigns shall fail to pay or cause to be paid any of the sum or sums aforesaid at the time the same or either thereof shall become due as aforesaid, then and thereupon this agreement shall be terminated and any and all sum or sums that shall have been theretofore paid hereon shall be forfeited to and retained by the party of the first part as a penalty and for liquidated damages, and notice of such termination and forfeiture is hereby expressly waived by the party of the second part, and all right, demand or claim for any balance of the purchase price aforesaid, then remaining unpaid, is hereby waived by the party of the first part. But if the said several sums shall be promptly paid at the times and in the manner aforesaid, then and thereafter, upon the request of the party of the second part or his assigns, the said party of the first part, his heirs, executors, administrators or assigns, shall and will execute and deliver to the said party of the second part or his assigns a good and sufficient deed of conveyance of all the right, title, claim, lien, interest, and estate which he now has or may hereafter acquire in and to the premises aforesaid and all thereof.

The party of the second part agrees, pending the final performance hereof and as one of the essential conditions of this agreement, to keep the assessment work necessary to protect the possessory title of the party of the first part from forfeiture under the law, fully and seasonably performed and due proof thereof recorded as by law provided, without cost to the party of the first part and for the use and benefit of the party of the first part.

NOW THEREFORE, if the party of the second part shall fail to pay and perform all or any of the sums to be paid and agreements to be performed as herein provided, and if the party of the first part shall fully perform all

the covenants and agreements herein contained on his part as herein provided, then this obligation to be void, else of full force and virtue.

In presence of us:

_____ _____

_____ _____

(Add the usual acknowledgment.)

Should it be desired to deposit the deeds in the hands of some agreed person for delivery to the purchaser on compliance with certain conditions the following form may be used:

ESCROW AGREEMENT

The enclosed deed of the lode is hereby placed in the Bank of , in escrow. If shall place or cause to be placed to the credit of , in said Bank of on or before , 190 , the full sum of Dollars, then and in that case the said bank is hereby authorized to deliver the enclosed deed to , or his order. In case the said shall not place, or cause to be placed, to the credit of said in said Bank, the full sum of Dollars, on or before , 190 , then the said bank is hereby authorized to return the enclosed deed to the said or his order.

_____

_____

_____, 190 .

Not infrequently one party furnishes the capital to purchase the outfit, tools, and provisions for a prospector, for the purpose of prospecting or searching for mines or mineral lands, upon an understanding that such lands or minerals, if found, shall be shared together. Such enterprise is known as "grub-staking," and the following is a common form of agreement which should be executed in duplicate and a copy retained by each of the parties to the same. In some States such contracts must be recorded to be valid. See the State Statutes, Appendix.

GRUB-STAKE CONTRACT

Whereas, of the County of , State of , has this day paid and furnished to of , County of , State of , the sum of $, to be used and expended by the said as and for a grub-stake, in prospecting and searching for mines and mineral lands and rights in the of during the following months;

NOW THEREFORE, it is hereby agreed that the said

shall faithfully and diligently prospect and search for mines, mineral land, minerals and mining rights within the said territory and during the said period and properly locate, acquire and secure the same, and that the said shall be the equal owner with said of and in all such discoveries and properties and rights — the said not to be or become liable to any person or in any manner for any debt, contract or obligation which the said prospector may incur or assume in the premises, without the written consent of the said .

Witness our hands and seals this day of A.D.

_____ _____

_____

Witnesses.

Tunnel Claims

A locator must, at the time the tunnel enters cover, erect at the point of commencement or face a substantial post or monument, and post thereon a notice containing the name of the locator or claimant, the proposed course or direction of the tunnel, and the course and distance from the point of commencement to some natural object or permanent monument by which to fix the situs, as in lode or placer locations.

At the time of posting the notice and marking the boundaries, a full and correct copy of the notice of location, defining the tunnel claim, must be filed in the office where location notices are, by law, required to be filed, and there must be attached to and filed with the notice a sworn statement of declaration of the owners or claimants setting forth the facts in the case; the amount expended by themselves and their predecessors in interest in prosecuting the work therein; the extent of the work performed; and that it is their intention in good faith to prosecute work on such tunnel with reasonable diligence, for the discovery of mines or the development of a vein or lode, or both, as the case may be. This statement and notice, after being recorded, must be kept on file with the recording officer for future reference.

The following form may be used:

Notice of Location of the Mining Tunnel Claim

Be it Known, that the undersigned, citizens of the United States, have this day of A.D. 190 , claimed and located a tunnel claim for the purpose of running therein a tunnel feet high

and feet wide, for discovering and working veins, lodes and mineral deposits on the line thereof (or cutting and working the lode, now claimed and held by us).

Said tunnel claim is situated in the Mining District, County of , State of , and the location and boundaries thereof are distinctly staked and marked upon the surface at the place of commencement, terminus and along the lines thereof. Said claim is (3000) feet long, and (750[1]) feet wide on each side of the center line of said proposed tunnel, and extends in a direction from the face or point of commencement of said tunnel, where this notice is posted.

From this point (give courses and distances to some natural object or permanent monuments, as in the case of lode location).

_____ _____

_____ _____

Locators.

State of

SS

County of

and being first duly sworn, on oath, each for himself doth severally declare and say: that he is one of the locators named in and who executed the foregoing notice of tunnel location. That it is the *bona fide* intention of said locators to diligently prosecute the work on said tunnel for the discovery of mines and development of the same. That they have commenced such tunnel at the point described in the foregoing notice and driven the same to the point where said tunnel enters cover, and have duly posted a notice at that point of which the foregoing is a true and correct copy; that they have plainly marked the proposed line of said tunnel by placing suitable stakes along said line from the point of commencement to the terminus at intervals of 200 feet, and by placing like stakes at like intervals along the sides of said claim, 750 feet distant from and parallel with the center line of said proposed tunnel, and also across the ends of said claim, all such stakes being properly marked with the name of said tunnel and the date of the location thereof.

That the said locators have heretofore expended in prosecuting work on said tunnel the sum of $, and have driven said tunnel from the point of commencement, a distance of feet (describe all other work and improvements). That there were no known ledges, lodes, or veins

[1] The question as to the width of the tunnel claim on each side of the center line thereof is much in doubt, from the conflicting decisions, and it is deemed safest to establish the lines of the claim 750 feet distant from the center line, on either side thereof, and to make the notice accordingly. It has, however, been held that the claim may be 1500 feet in width on either side of the center line — thus practically making the entire claim 3000 feet square — and from this it would follow that upon discovery of a lode within the tunnel, the location thereof might be made in such a way as to give 1500 feet from the point of discovery *in either direction* (though not in both directions).

The writer doubts the correctness of this position, hence the form gives 750 feet as the correct width on each side the center of the tunnel claim — thus making it 1500 by 3000 feet in size. This form may be varied as desired, in this particular. G. D. E.

See *Ellet* vs. *Campbell*, 33 Pac., 521: *Enterprise Co.* vs. *Rico-Aspen Co.*, 66 Fed., 200.

existing or outcropping along the course of said tunnel location nor crossing the same in their trend or course, at the time of making said location.

Subscribed and sworn to before me this day of , 190 .
Notary Public, State of ,
County of .

If any veins or lodes are cut by the tunnel, the locators have the right to one claim on each such vein or lode. The total length must not exceed 1500 ft. and the point of discovery must be within the tunnel.

No location of such lodes or veins need be made upon the surface; but a proper location notice containing the other essentials should be posted at the mouth of the tunnel and duly recorded.

While there is no provision for patenting a tunnel claim, yet any vein or lode location, discovered and made by means of such tunnel, may be patented in like manner as other lode claims.

Failure to do work on the tunnel so located for a period of six months will be deemed an abandonment of all rights to the location.

Water Rights

The several States have enacted statutes covering the acquirement of rights to water flowing in streams within such States; and the statutes of the particular State must, in each case, be consulted and followed. In general, however, the provisions are similar in character and requirements, and are all based upon actual appropriation and use of the water claimed.

The vital element of appropriation is actual diversion of the water from the bed or stream by means of some ditch, flume, pipe, reservoir, or other structure. Mere claim or notice is insufficient unless followed promptly by actual steps to accomplish the diversion.

Such rights may be conveyed by deed in the usual form. Like property in mining claims, they may be lost by abandonment.

If the conveyance of the water is to be across the land of others, the right to use such land must be also acquired by the methods pointed out in the statutes of the particular State relating to eminent domain.

The following forms are sanctioned by general usage:

NOTICE OF RIGHT TO WATER

The undersigned hereby claims the water here flowing (or being) in the river (or lake) to the extent of cubic feet per second, for mining purposes, said water to be diverted at (describe particularly the point of diversion by reference to some natural object or permanent monument, as in case of lode claims), the point where this notice is posted, by means of a dam, ditch, flume, tunnel or pipe, and by some or all such means conveyed and conducted to and upon the Mining Claim, situated in the Mining District, County of , State of , notice of the location of which is recorded in the office of the of said County in Book of on page .

I also claim the right of way for said ditch, flume, pipe or other means of conveyance, feet wide, from the said point of diversion (describe the right of way by distance, general direction, size and other particulars) to and upon said Mining Claim.

Dated the day of A.D. .

_____ _____

_____ *Claimant.*

Witnesses.

A true copy of such notice should be, within 10 days, filed for record in the office where deeds are recorded, and attached thereto and recorded therewith should be an affidavit, substantially as follows:

State of

SS

County of

being first duly sworn, on oath, says: that on the day of , A.D. , he posted the original notice, of which the foregoing is a true copy, in a conspicuous place at the point of intended diversion therein described, by posting the same conspicuously upon a stake, four feet long and four inches square, set firmly in the ground at said point, to wit: (describe the point of diversion as in the notice).

Subscribed and Sworn to, etc.

Within the required time thereafter (usually 60 days) he should commence the work of diversion, which must be thereafter continued in good faith, with reasonable diligence, until completed and the water delivered at the place of its intended use.

Such rights, when secured, are protected by the provisions of secs. 2339–40, Revised Statutes of the United States.

XXII

Procedure for obtaining patent; forms of application; adverse claims; forms for adverse contests; coal lands.

Patents on Mineral Land

AFTER work and improvements to the amount of $500 for each claim have been properly expended, the locator or his assigns may secure the full title to the land and the patent therefor, pursuant to the provisions of section 2325 of the Revised Statutes. The proceedings are the same whether for a lode or a placer patent. Several distinct lodes or placers, or both, including mill-sites appurtenant to such lodes, may be included in one application and patent, if not too widely separated, if owned by the same applicant or association.

The application may be made by an agent, duly authorized in writing. If there are joint owners they must join in the application in person or by their duly authorized agent. The following is the procedure that must be followed carefully, step by step, to secure a patent for such claims; the forms here given have been sanctioned by practical use and may be varied to fit the facts in the particular case.

(*a*) The Mineral Survey must be procured to be made under the direction of the United States surveyor-general for the State or district in which the claims are situated. For this purpose the applicant must procure, from the proper recorder's office, certified copies of all the original and all amended notices of location of each claim embraced in the application.

He should then make suitable arrangements with some competent deputy United States mineral surveyor for doing the work, and agree with him upon the compensation to be paid therefor by the applicant.

A letter should then be addressed to the United States surveyor-general of the proper State or district, as follows:

To THE U. S. SURVEYOR GENERAL,

District of

DEAR SIR:

The undersigned desires to have a mineral survey made of the (Lode or Placer) Mining Claims (or Mill-site), described in the certified copies of notices of location herewith enclosed, to wit: (name and describe the claims) all being contiguous (or near) to each other and situated in the Mining District, County of , State of .

To that end you are requested to specify the amount to be deposited to the credit of the United States for work to be done in your office, and upon payment of the same to appoint Mr. of a Deputy U. S. Mineral Surveyor, to make and report such survey, at the cost of the undersigned.

Dated

Respectfully,

Claimant.

P. O. Address

Thereupon the surveyor-general will specify the amount to be deposited by the applicant to cover the cost of the work in his office. This is usually $30 for the first and $25 for each additional claim or mill-site embraced in the application.

The applicant will then pay the required amount to some bank which has been designated as a National depositary, taking triplicate receipts therefor. The letter of the surveyor-general should be presented to the bank with the deposit for its information in preparing these receipts.

Two of these receipts should then be forwarded to the surveyor-general, and the order for survey will then be issued and sent to the applicant by mail. This, with the instructions and papers accompanying it, will be handed to the deputy mineral surveyor, who will make the survey and file his report with plat and field notes with the surveyor-general.

Where the location is of placer ground taken by legal subdivisions, upon land already surveyed, the application should so specify, the particular description being carefully given, and the survey will then be confined to a descriptive report and plat of the claim and the work and improvements done thereon.

Upon receipt of the deputy's report the surveyor-general will prepare and furnish to the applicant without charge one copy of the field notes and two copies of the plat; copies of location notices will accompany the field notes.

(*b*) The Application for Patent must now be prepared by the applicant.

APPLICATION FOR PATENT

State of

SS

County of

Application for patent for the and Lode Mining Claims and Mill-site.

To the Register and Receiver of the United States Land Office at State of .

, being first duly sworn, according to law, deposes and says that, in compliance with the mining rules, regulations and customs by of County of , State of (a corporation of the State of , of which corporation this affiant is the agent and attorney and duly authorized to make this affidavit and application), the said applicant for patent herein has become the owner of and is in the actual, quiet and undisturbed possession of the mining claims and mill-site hereinafter described consisting of the veins, lodes or deposits, bearing gold, silver, and copper and the non-mineral mill-site not contiguous thereto, together with surface ground for the convenient working thereof, as allowed by local rules and customs of miners; said several veins, lodes or deposits being contiguous to each other and situate in the Mining District, County of , State of , and described as follows, to wit:

, linear feet of the lode claim with feet surface ground; linear feet of the lode claim with feet surface ground; and the mill-site, being by feet, in all acres of non-mineral ground not contiguous to either of said claims; all being more particularly set forth and described in the official field notes of survey thereof, hereto attached, dated A.D. , and in the official plat of said survey now posted conspicuously upon said several mining claims and mill-site, a copy of which is filed herewith.

Deponent further states that the facts relative to the right of possession of said to said mining claims, veins, lodes, deposits, surface ground and mill-site, so surveyed and platted, are substantially as follows, to wit:

Said claim was discovered and located by on the day of , A.D. , and was, prior to the survey for this application, duly conveyed by said locator to this applicant, by good and sufficient deed of conveyance which has been duly recorded in the office of the of , County .

Said lode claim was discovered and located by on the day of , A.D. , and was, prior to the survey thereof for this application, duly conveyed by said locator to this applicant, , by good and sufficient deed of conveyance which

has been duly recorded in the office of the of County .

Said mill-site was claimed and located by , this applicant, on , A.D. .

All said claims and mill-site are now each and all of them in the undisturbed and peaceable possession and occupation of this applicant; all of which facts as to location and title will more fully appear by reference to the copies of original location notices and the records thereof and the abstract of title hereto attached and made part of this affidavit.

The value of the labor done and improvements made upon said claims by the applicant being equal to the sum of , and said improvements consist of the following cuts, tunnels, and other improvements, to wit:

(Describe fully the work and improvements on each claim and specify the values of same.)

In consideration of which facts and in conformity with the provisions of Chapter Six of Title Thirty-two of the Revised Statutes of the United States, application is hereby made for and in behalf of said for a patent from the Government of the United States for said and lodes, veins, and mineral deposits and mill-site, and the surface ground so officially surveyed and platted, all said claims being and constituting one group and lying and being contiguous to each other, and the said mill-site being non-mineral ground and not contiguous to any of said claims.

For and on behalf of

Subscribed and sworn to before me this day of A.D. , and I hereby certify that I consider the above deponent a credible and reliable person, and that the foregoing affidavit, to which was attached the field notes of survey of the mining claims and mill-site and the abstract therein described, was read and examined by him before his signature was affixed and the oath made by him.

Justice of the Peace in and for Precinct, in said County and State.

The foregoing application and a copy of the field notes, and an abstract of the title (which should be a copy of every location notice, proof of labor, conveyance, or instrument affecting the title, certified by the recording officer of the county) should be attached together and filed, with a copy of the plat, in the land office of the district. This should be done *after* the plat and notice have been posted.

(*c*) The Notice of Application for Patent must then be prepared. This should be done with the greatest care as it will form the basis of all future proceedings and of the patent.

NOTICE OF THE APPLICATION OF
FOR A UNITED STATES PATENT

NOTICE IS HEREBY GIVEN that, in pursuance of Chapter Six of Title Thirty-two of the Revised Statutes of the United States of County of , State of , claiming linear feet of the lode, vein or mineral deposit, and linear feet of the lode, vein or mineral deposit, each with surface ground feet in width, each bearing gold, silver, copper, and other valuable minerals and the mill-site, containing five acres of non-mineral land, not contiguous to said claims; each and all said claims and mill-site lying and being situate in Mining District, County of , State of , and said mining claims being contiguous to each other, have made application to the United States for a patent for the said mining claims and mill-site which are more fully described as to metes and bounds by the official plat herewith posted and by the field notes of survey thereof, now filed in the office of the Register of the District of Lands, subject to sale at , which field notes of survey describe the boundaries and extent of said claims on the surface, with magnetic variations at 23 deg. and 45 min. East, as follows, to wit:

(Here insert an accurate description of each claim as set forth in the field notes; the following has been approved:

"DESCRIPTION OF SILVER KING FRACTION LODE

"Beginning at corner No. one (1), a hemlock post five (5) inches square, five (5) feet long, set two (2) feet in the ground, with mound of earth and stone scribed 1-688A, and also 2-688A, whence the Southwest corner of Sec. Eight (8), Township Thirty (30), North of Range Ten (10), East, W. M., bears South 39 deg., 21 min., and 9 sec. East, 5166-79-100 feet;

Thence North 37 deg. and 30 min. West, 619-8-10 feet to corner No. two (2), a hemlock post, five (5) inches square, five (5) feet long, set two (2) feet in the ground, with mound of earth and stone, scribed 2-688A;

Thence South 74 deg. and 11 min. West, 600 feet to corner No. three (3), a hemlock post, five (5) inches square, five (5) feet long, set two and one-half (2½) feet in the ground, with a mound of stone and earth, scribed 26-88A;

"Thence South 37 deg. and 30 min. East, 619 8-10 feet to corner No. four (4), a hemlock post, five (5) inches square, five (5) feet long, and set two (2) feet in the ground, with mound of earth and stone, scribed 4-688A, and also 3-688A;

"Thence North 74 deg. and 11 min. East, 600 feet to corner No. one (1), the place of beginning. Magnetic variation (23 deg. 45 min. East)."

The presumed general course of direction of the said and lodes, veins and mineral deposits being shown upon the plat posted herewith as near as can be determined from present developments; said claim, being for linear feet thereof, and said being for linear feet thereof, together with the surface ground shown upon the official plat posted herewith; the said several claims being contiguous to each other, end to end.

The said claim is bounded on the by the lode, and on the by the lode claim; the is bounded on the by the lode.

(If other claims are included in the application, but shown on separate plats, add the following:

"Said claimants also embrace in said application the following contiguous claims, embraced in and part of the same survey, all owned by the same applicants and being contiguous to the claim above described, and forming part of the same group of mining claims and locations, to wit:

"The Bonanza Queen, Silverton, Silverton Fraction, Oregon, Oregon Fraction, Sutherland, Sutherland Fraction, Portland and Salem lodes, veins and deposits, and the Bonanza Queen Mill-site; each and all of which are fully described in the field notes of survey thereof, now filed in the office of Register of the District of Lands above described, and appear in and by plats and notices of said application now posted upon the said claims, in accordance with law.")

Any and all persons claiming adversely the mining ground, vein, lode, premises, or any portion thereof, so described, surveyed, platted and applied for, are hereby notified that unless their adverse claims are duly filed, as according to law and the regulations thereunder, within sixty (60) days from the date hereof, with the Register of the United States Land Office, at in the County of , and State of , they will be barred in virtue of the provisions of the said statute.

_____.

Locators and Claimants.

Dated on the grounds this day of , A.D. 190 .

This notice and a copy of the plat of the claim described therein must now be posted conspicuously upon the claims and mill-site, and kept so posted for sixty days, and during the entire period of publication.

The plat should be securely tacked upon a board prepared for the purpose, and protected at the top and sides by a broad edge or cover from the weather.

The notice must also be fastened to the board in such a manner as to permit of its being easily read. The board may be fastened upon a stake at or near the discovery shaft, or at the opening of a tunnel or some conspicuous place upon the claims or one of them. Where four or more claims in one group are embraced in the application it is customary to make two complete sets of plats, each set showing only two claims. In such case the set showing one pair of claims, with the appropriate notice, is posted upon one of the claims so shown; the plat showing the other pair of claims is posted in like manner upon one of the claims shown

upon it, and notice changed to correspond. The plat which shows the mill-site must be posted thereon and on the claim for which the mill-site is taken.

This posting should be done in the presence of two disinterested persons, each a citizen of the United States over 21 years of age, who must make the necessary affidavit or proof of such posting.

(*d*) The claimant should now file with the Register the application for patent, abstract of title, notice of application and proof of the due posting of the notice and plats. The affidavit of the two witnesses should be substantially as follows:

PROOF OF POSTING NOTICE AND PLAT ON THE CLAIM

State of
SS
County of

and being first duly sworn, each for himself, severally, doth depose and say, that he is a citizen of the United States, over the age of twenty-one years, and was present on the day of , A.D. 190 , when a plat representing the and lode mining claims and mill-site, certified to as correct by the United States Surveyor General of and designated by him as Survey , together with a notice of the application of for a patent for the mining claims, mill-site and premises so platted, was posted in a conspicuous place upon said mining claims and mill-site, to wit: (describe place and manner of posting) where the same could be readily seen and examined; the notice so conspicuously posted upon said claims and mill-site being in words and figures as follows, to wit: (here insert a literal copy of the notice (*c*) including signatures).

And that said notice and plats were so posted by one of said applicants.

_____

_____

Witnesses.

Subscribed and sworn to before me this day of , 190 , and I certify that I consider the above deponents credible and reliable witnesses, and that the foregoing affidavit and notice were read by each of them before their signatures were affixed thereto and the oath made by them.

Notary Public in and for the State of ,
Residing at ,
County of .

(*e*) A newspaper must now be designated by the register in which 60-days publication of the notice must be made.

This should be the one nearest to the claim by the usual routes of travel. The register may designate a paper other than

the one nearest the claim, for good and sufficient reasons. The applicant must secure and file with the register a contract with the publisher of such newspaper, agreeing to look only to the applicant for payment of the cost of such publication:

AGREEMENT OF PUBLISHER

The undersigned, publisher, and proprietor of , a weekly newspaper, printed and published at , in the County of , State of , hereby agree to publish a notice of application for U. S. Patent, dated United States Land Office, required by law, of for a patent for their claims on the and lodes and mill-site, situated in Mining District, County of , State of , according to law, and to hold the said alone responsible for the amount due for such publication. It is expressly stipulated that no claim shall ever be made against the Government of the United States or its officers or agents for or on account of such publication.

Dated , A.D. 190 .

WITNESS:

Publisher.

(*f*) The notice to be published should be substantially as follows:

NOTICE OF APPLICATION FOR PATENT

Mining Application No.

United States Land Office at , A.D. 190 .

NOTICE IS HEREBY GIVEN that whose post-office address is , and , whose postoffice address is , have this day filed their joint application for a patent for the following described lodes, veins, deposits, and mines bearing gold, silver, copper, and other valuable minerals and mill-site, all constituting one group of claims and situate in Mining District, County of , State of , to wit:

linear feet of the vein or lode, with surface ground feet in width; linear feet of the vein or lode with surface ground feet in width; and mill-site x feet containing acres all designated by the field notes and official plat on file in this office as survey No. , the particular descriptions thereof being as follows, to wit:

DESCRIPTION OF Lode.

Beginning at Corner No. one (1), a hemlock post, (etc., as in form (*c*),) Magnetic variations in all cases being .

The location of these mines and mill-site are each recorded in the office of the of County, State of , as follows, viz.:

The notice of location, in volume , of on page .
The notice of location, in volume , of on page .
The mill-site notice of location in volume of on page .
The adjoining claimants are , claiming the lode claim, on the north; , claiming the lode claim on the east, etc. (describe all adjoining claims).

Any and all persons claiming adversely any portion of said mines, lodes, veins, mineral deposits, surface ground or mill-site, above described and embraced in this application, are required to file their adverse claims with the Register of the United States Land Office at , in the County of , State of , during the sixty (60) days' period of publication hereof, or they will be barred in virtue of the provisions of the statute in such case made and provided.

United States Register.

A copy of this notice must be posted in the office of the register during all the 60-days period of publication; hence it must be prepared in triplicate, one copy for posting, one for filing, and one for the printer's use.

This posting will be done and certified by the register.

(*g*) At the end of the 60-days period of publication, the applicant must procure and file with the register the affidavit following, which may be made by one of the applicants or any one having knowledge of the facts:

PROOF THAT NOTICE AND PLAT REMAINED POSTED ON THE CLAIM DURING PERIOD OF PUBLICATION

State of
SS
County of

, being first duly sworn according to law, deposes and says: that he is , one of the applicants for patent for and claimant of the and lode mining claims and mill-site situated in Mining District, County of , State of , the general plat of which premises, designated by the Surveyor General as Survey , together with the notice of application for a patent thereof, was posted thereon on the day of , A.D. 190 , as fully set forth and described in the affidavit of and , dated the day of , A.D. 190 , which affidavit was duly filed in the office of the Register at , on the day of , A.D. 190 , in this case; that the plat and notice so mentioned and described remained conspicuously continuously posted upon said claims and mill-site from the day of , A.D. 190 , until and including the day of , A.D. 190 , including the 60 days' period during which notice of said application for patent was published in the newspaper.

Subscribed and sworn to before me this day of , A.D. 190 .

Notary Public in and for County,
State of
Residing at .

(*h*) The affidavit of the publisher must also be filed, showing publication of the notice, as follows:

PROOF OF PUBLICATION OF NOTICE OF APPLICATION FOR PATENT

State of

SS

County of

Copy of Notice to be cut from the paper and pasted here.

, being first duly sworn according to law, deposes and says: that he is and during all the time hereinafter mentioned was the publisher of , a weekly newspaper published at , in the County of , State of .

That the notice of the application for a patent for and mining claims and mill-site, of which a copy, cut from the columns of said newspaper, is attached to the margin of this affidavit, was first published in said newspaper in its regular issue on and dated the day of , A.D. 190 , and was published weekly on each and every thereafter, to and including the day of , A.D. 190 , in each regular issue of said newspaper, the full period of nine consecutive weeks.

Publisher.

Subscribed and sworn to before me this day of , A.D. 190.

Notary Public in and for County,
State of
Residing at

(*i*) With these affidavits must also be filed proof of the value of the work and improvements upon the claims. This may consist of the affidavits of two disinterested parties, and may be in the following form:

PROOF OF $500 WORK AND IMPROVEMENTS

State of

SS

County of

and , of lawful age, being first duly sworn, each for himself, severally doth depose and say:

That he is well acquainted with the and lode mining claims and mill-site, situated in Mining District, County of , State of , for which have made application for patent under the laws of the United States, and that the labor done, and the improvements made thereon by the applicants and their grantors exceeds the sum of five hundred dollars in value, for each of said claims, and the same consists of (here describe fully the items of work and improvements and the value of each).

Subscribed and sworn to before me this day of , A.D. 190 .

Notary Public in and for County,
State of
Residing at

(*j*) There must also be proof of the non-mineral character of the mill-site, which should be by affidavit of disinterested parties as follows:

PROOF OF NON-MINERAL CHARACTER OF MILL-SITE

State of
SS
County of

and , of lawful age, being first duly sworn each for himself, severally doth depose and say: that he is well acquainted with the mill-site, situated in Mining District, County of , State of , for which and are now applicants for a United States patent. That no known veins exist within the limits of said mill-site nor is there any known deposit of gold or other valuable minerals thereon, but the same is wholly non-mineral in character and is used by the said and in connection with the lode mining claim for mining and milling purposes, to wit: (describe use of mill-site fully). That he has no interest whatever in the premises.

Subscribed and sworn to before me this day of , A.D. 190 .

Notary Public in and for the County of
State of
Residing at

(*k*) If the claim is for a placer, the affidavit of two disinterested parties must be filed, showing that no known vein exists thereon, viz.:

PROOF THAT NO KNOWN VEINS EXIST IN A PLACER CLAIM

State of
SS
County of

and , of lawful age, being first duly sworn each for himself, severally doth depose and say: That he is a resident of Mining District, County of , State of , and is well acquainted with the placer mining claim, embracing acres, situated in said mining district, County and State, owned and worked by and , applicants for United States patent therefor. That for many years he has resided near and frequently been upon said placer claim, and that no known vein or veins of quartz, or other rock in place bearing gold, silver, copper, tin, lead, cobalt, nickel, or cinnabar exist on said claim, or any part thereof, so far as he knows, and he verily believes that none exist thereon. That he has no interest whatever in either of said claims.

Subscribed and sworn to before me this day of , A.D. 190 .

Notary Public in and for County, State of
Residing at

(*l*) The certificate of the clerk of the court of general jurisdiction of the county wherein the claims are situated must be filed showing that no suit is pending, etc.:

CERTIFICATE THAT NO SUIT IS PENDING

State of
SS
County of

I, , Clerk of the Court of the State of in and for the County of , do hereby certify that there is now no suit or action of any character pending in said court involving the right of possession to any portion of or lode mining claim or mill-site, and that there has been no litigation before said court affecting the title to either of said claims or mill-site or any part thereof for years last past, other than what has been finally decided in favor of and .

In witness whereof I have hereunto set my hand and affixed the seal of said Court this day of , A.D. 190 .

Clerk of the Court, County, State of .

(*m*) The applicant must establish the fact of his citizenship or declaration of intention to become a citizen. This may be

done by his own affidavit in the case of an individual; if a corporation is the claimant, a certified copy of its articles of incorporation must be filed with a certified copy of the resolution or power of attorney authorizing the agent to make application for patent.

PROOF OF CITIZENSHIP

State of

SS

County of

and , being first duly sworn, each for himself, severally doth say: that he is one of the applicants for patent for the and lode mining claims and mill-site, situated in the Mining District, County of , State of . That he is a native born citizen of the United States, born at , in the County of , State of , on the day of , A.D. 18 , and is now a resident of , County of , State of (or that he was born at , in the , on the day of , A.D. 18. , and that on the day of , A.D. 18 , having removed to these United States and settled in , in the County of , State of , he duly declared his intention to become a citizen of the United States of America, before the Clerk of Court in and for the State of , County of , and the said declaration is there on record).

(If he has been fully naturalized, the fact should be stated, and also in what court and when it was done.)

Subscribed and sworn to before me this day of , A.D. 19 .

POWER OF ATTORNEY TO APPLY FOR PATENT

BE IT KNOWN that we and of , County of , State of , do appoint and constitute , Esq., of , County of , State of , to be our true and lawful agent and attorney in fact, for us and in our names, to make application to the United States for the entry and purchase of the and lode mining claims and mill-site, situated upon Government Lands in the Mining District, County of , State of , owned by us; to have the same and all thereof surveyed, and to take any and all steps necessary or proper to be taken to procure the U. S. Patents for any and all said claims and mill-site, granting the same to us. To do any and all act or acts in the premises proper to be done, the same as we or either of us might or could do in person.

Witness our hands and seals this day of , A.D. 19 .

(Seal)

WITNESS:

State of

SS

County of

On this day of , A.D. 19 , before me personally came and of , County of , State of , to me known to be the identical persons named in and who executed the foregoing power of attorney, and in due form of law acknowledged the same severally to be their free and voluntary act and deed.

Witness my hand and official seal this day of , A.D. 19 .

Notary Public in and for County,
State of
Residing at .

(*n*) The claimant must also file a sworn statement of the fees and charges paid by him in and about the proceedings, thus:

STATEMENT OF FEES AND CHARGES

State of

SS

County of

, being first duly sworn on oath, says: that he is one of the applicants for patent for the and lode mining claims and mill-site, situated in Mining District, County of , State of , and that in and about the prosecution of said application there has paid out the following amounts, and no more, viz.:

To the credit of the Surveyor General's office.....$
For surveying said claims and mill-site.....$
For filing in the local land office.....$
For publication of notice.....$
For the land embraced in the application.....$
Total .....$

Subscribed and sworn to before me this day of , A.D. 19 .

Notary Public in and for County,
State of
Residing at

(*o*) The land office will supply a suitable blank upon which must be executed a proper application to purchase the land.

Upon compliance with all these steps, if no adverse claim is filed, the applicants will be allowed to enter the claims and pay for the same at the rate of $5.00 per acre for lodes and mill-site, and $2.50 for placer claims, and the receiver's final receipt will be

issued at once for the same. In due course of time, usually six months to a year, the patent will issue and will be forwarded by mail to the applicants or their attorneys. If defects are found in the papers or proceedings, due notice will be given the applicants and opportunity to remedy them if possible.

All necessity for doing further assessment work ceases when the entry and payments are made.

Adverse Claims

Any person having or claiming any interest or estate in the lands embraced in the application for patent, adverse to the applicant, not already established by patent, or pending on previous application therefor, must file notice of such interest, estate, or claim, within the 60-days period of publication of the notice of application for patent, or be forever barred therefrom.

Lien holders are protected by sec. 2322, Revised Statutes and owners of easements by secs. 2338–40, Revised Statutes, and are not required to file adverse claims to preserve their rights, nor is it required of one holding a valid Government grant.

Such adverse claim must be filed with the register of the proper district prior to the expiration of the 60-days publication.

The Revised Statutes sec. 2635 prescribe the requisites of the adverse claim which must be sworn to by the claimant or his attorney cognizant of the facts. It must show the boundaries and extent of the adverse claim, and the nature and extent of the interference or conflict.

The practice and requirements in such cases are shown in L. O. Reg., pars. 78–88.

The following form may be used:

Adverse Claim

U. S. Land Office . .

In re-application of and for a United States Patent for the and lode, mining claims and mill-site, situated in the Mining District, County of , State of .

To the Register and Receiver of the United States Land Office at , and to the said applicants for patent and each of them:

You are hereby notified that of , County of , State of , a citizen of these United States (or who has declared his intention to become a citizen of these United States), is the lawful owner and is entitled to the possession of feet of the said lode

mining claim described in said application, as shown by the diagram posted on said claim, and the copy thereof on file in the land office with said application; and as such owner, this contestant does protest against the issuing of a patent thereon to said applicants and does dispute and contest their right to such patent.

This contestant presents the nature of his adverse claim and fully sets forth the same in the affidavit hereto attached, marked Exhibit *A*, and the further exhibits which are attached to and made a part of said affidavit.

Wherefore the said contestant respectfully asks the said Register and Receiver that all further proceedings in the said matter be stayed until a final settlement and adjudication of his rights in the premises can be had in a court of competent jurisdiction.

Dated , 19 .

Contestant.

EXHIBIT A

State of

SS

County of

, being first sworn duly, deposes and says: that he is a citizen of the United States, born in the State of , and is now residing in ; that he is the contestant and protestant named in, and who subscribed the notice and protest hereto annexed. Affiant further says that he is the owner by purchase and in the possession of the (adverse) lode or vein of quartz or other rock in place, bearing and other metals. That the said lode is situated in the Mining District, County, of .

(The history of the lode should be given in full; for instance as follows):

This affiant further says, that on the day of location the premises hereinafter described were mineral lands of the public domain, and entirely vacant and unoccupied, and were not owned, held or claimed by any person or persons as mining ground or otherwise, and that while the same were so vacant and unoccupied, and unclaimed, to wit: On the day of , 18 , (name locators), each and all of them being citizens of the United States, entered upon and explored the premises, discovered and located the said lode, and occupied the same as mining claims. That the said premises so located and appropriated consist of feet in a erly direction, and feet in a erly direction, as will fully appear by reference to the notice of location, a duly certified copy whereof is hereunto annexed, marked Exhibit B, and hereby made a part of this affidavit. That the locators, after the discovery of said lode, drove a stake on said lode on the discovery claim, erected a monument of stone around said stake, and placed thereon a written notice of location, describing the claim so located and appropriated, giving the names of the locators and quantity taken by each, and after doing all the acts and performing all the labor required by the laws and regulations of said Mining District and Territory of the locators of said lode caused

said notice to be filed and recorded in the proper books of record in the Recorder's office in said district (or county) on the day of 18 .

Affiant further says, that the said locators remained continuously in possession of said lode, working upon the same, and within months from the date of location had done and performed work and labor, on said location in mining thereon, and developing the same, more than day's work, and expended on said location more than hundred dollars, and by said labor and money expended on said mining location and claim had developed the same and extracted therefrom more than tons of ore.

And affiant further says, that said locators, in all respects, complied with every custom, rule, regulation, and requirement of the mining laws, and every rule and custom established and in force in said Mining District, and thereby became and were owners (except as against the paramount title of the United States) and the rightful possessors of said mining claims and premises.

That the said lode was located and worked by said locators as tenants in common, and they so continued in the rightful and undisputed possession thereof from the time of said location until on or about the day of , A.D. 18 , at which time the said locators and owners of said lode formed and organized a corporation under the laws of the State (or Territory) of , and incorporated under the name of the " ," and on the day of , A.D. 18 , each of the locators of said lode conveyed said lode and each of their rights, titles and interests in and to said lode, to said " ."

On the said day of , A.D. 18 , the said company entered into and upon said lode and was seized and possessed thereof and every part and parcel of the same, and occupied and mined thereon until the day of , A.D. 18 , at which time the said mining company sold and conveyed the same to this affiant, which said several transfers and conveyances will fully appear by reference to the abstract of title and paper hereto attached, marked Exhibit D, and made a part of this affidavit.

(In Case of Individual Transfers.)

And this affiant further says, that the said , who located the claim northwesterly on the said lode, and the said , who located the claim northeasterly thereon, was seized and in possession of said claims, and occupied and mined thereon until the day of , 18 , at which time the said and sold and conveyed the same to , and thereupon the said was seized and possessed of said mining claims and locations, and occupied and mined thereon until the day of , 18 , at which time the said sold and conveyed the same to this affiant, as will fully appear by reference to the abstract of title and paper hereto attached, marked Exhibit D, and which this affiant hereby makes a part of this his affidavit.

Affiant further says, that he is now and has been in the occupation and possession of the said lode since the day of , 18 , and that the said lode and mining claims were located, and the title thereto established, several before said (applied for) lode was located.

Affiant further says, that said lode, as shown by the notice and diagram posted on said claim, and the copy thereof filed in the United States Land Office at said with said application for a patent, crosses and overlaps said lode, and embraces about hundred feet in length by hundred feet in width of the said lode, the property of this affiant, as fully appears by reference to the diagram or map duly certified by , United States Deputy Surveyor, hereto attached, marked Exhibit C, and which diagram presents a correct description of the relative locations of the said (adverse) lode, and of the pretended (applied for) lode.

Affiant further says, that he is informed and believes that said applicant for patent well knew that affiant was the owner in possession and entitled to the possession of so much of said mining ground embraced within the survey and diagram of said application, as is hereinbefore stated, and that this affiant is entitled to all the and other metal in said (adverse) lode, and all that may be contained within a space of feet on each side of said (adverse) lode.

And affiant further says, that this protest is made in entire good faith and with the sole object of protecting the legal rights and property of this affiant in the said (adverse) lode and mining premises.

Subscribed and sworn to before me this day of , 18 .

On the diagram marked Exhibit C, the surveyor must certify in effect, as follows:

SURVEYOR'S CERTIFICATE

I hereby certify that the above diagram correctly represents the conflict claimed to exist between the and lodes, as actually surveyed by me. And I further certify, that the value of the labor and improvements on the (adverse) lode exceeds five hundred dollars, and said improvements consist of (state in full).

(Place and date.)

U. S. Deputy Surveyor.

The register and receiver will receive the proofs of posting publication, etc., but will stay the entry and further proceedings, pending the determination of the adverse claim.

Within 30 days after filing his claim, the adverse claimant must bring a suit in a court of competent jurisdiction (State or Federal) to determine the right of possession. Such action will be governed by the rules of procedure of the court where it is brought.

The complaint must show a proper location and compliance with the Federal, State, and local laws, rules, and regulations by the plaintiff; ouster by the defendant; timely filing of a proper notice of contest; citizenship of the plaintiff; and the full performance of all acts necessary to establish a good title as against defendant, and at least a possessory right as against the government.

This action must be commenced within 30 days and prosecuted with reasonable diligence, and failure to do so will be a waiver of such adverse claim. The issue may be tried with or without a jury.

After verdict and final judgment, the filing of a certified copy of the judgment-roll (which includes the pleadings, notice, verdict, and judgment) with the register of the land office will enable the party entitled thereto to complete his title by entry, payment, and patent for so much of the claim as is found to belong to him.

The filing of an adverse claim may be equivalent to an application by the adverse claimant for a patent for the portion in conflict, and he may, if his claim is sustained, complete the same by entry and payment and secure patent therefor.

Any statement of facts which shows that the person alleging same has a better right to the premises sought to be patented, or any part thereof, than the applicant, is the proper subject-matter of an adverse claim.

The applicant may, if he so desires, file a relinquishment of so much of his claim as is included within the lines of the adverse claim, and thereupon proceed and obtain patent for the remainder of his claim.

The locator of a tunnel claim must protect his rights by filing an adverse claim against an applicant for a patent for a lode lying across his line.

When the patent is finally issued, it is conclusive of the title in all collateral proceedings. The only manner in which it can be attacked is at the instance of the Government for fraud or mistake. So far as the rights of third parties are concerned, the rights of the applicant are perfected when the proceedings are completed and the receiver's final receipt or certificate of payment is issued.

Coal Lands

Coal lands are acquired under the provisions of secs. 2347–51 of the United States Revised Statutes and the Land Office regulations pursuant thereto.

APPENDIX

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COAL LANDS

The Rules and Regulations concerning the entry of coal land in the United States are numbered 1 to 25 and are arranged consecutively beginning on p. 406. Those concerning the entry of coal lands in Alaska are numbered 1 to 30 and are also arranged consecutively beginning on p. 412.

[1] Secs. 102 to 104, inclusive, are omitted as explained on p. 381.

[2] Sec. 113 is only a reference to the Act of June 6, 1900, concerning Alaska. This Act is given on p. 391.

UNITED STATES MINING LAWS, AND REGULATIONS THEREUNDER, RELATIVE TO THE PRESERVATION, EXPLORATION, LOCATION, POSSESSION, PURCHASE, AND PATENTING OF THE MINERAL LANDS IN THE PUBLIC DOMAIN

TITLE XXXII, CHAPTER 6, REVISED STATUTES

MINERAL LANDS AND MINING RESOURCES

[The sections titles in heavy faced type are those of the sections of the United States Revised Statutes immediately following, numbered Sec. 2318, etc., and of subsequent laws enacted by Congress concerning mining. The matter in small type directly under the section titles is the date of enactment of such section. Under each of the sections of the statute are placed the sections of the Land Office Regulations, numbered 1, 2, 3, etc., that refer to or are concerned with the subject matter of such section of the statute. The sections of the Land Office Regulations have the numbers given them as printed in the official edition. As the plan here used destroys the consecutive arrangement of the sections of the Regulations, a table is given, p. 454, which shows by the consecutive numbers, the pages of this book on which each section is to be found; also the same for the sections of the Revised Statutes.]

Mineral Lands Reserved

4 July, 1866, c. 166, s. 5, v. 14, p. 86

SEC. 2318. In all cases lands valuable for minerals shall be reserved from sale, except as otherwise expressly directed by law.

Mineral Lands Open to Purchase by Citizens

10 May, 1872, c. 152, s. 1, v. 17, p. 91

SEC. 2319. All valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase, by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law, and according to the local customs or rules of miners in the several mining districts, so far as the same are applicable and not inconsistent with the laws of the United States.

Length of Mining Claims upon Veins or Lodes

10 May, 1872, c. 152, s. 2, v. 17, p. 91

SEC. 2320. Mining claims upon veins or lodes of quartz or other rock in place bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposits, heretofore located, shall be governed as to length along the vein or lode by the customs, regulations, and laws in force at the date of their location. A mining claim located after the tenth day of May, eighteen hundred and seventy-two, whether located by one or more persons, may equal, but shall not exceed, one thousand five hundred feet in length along the vein or lode; but no location of a mining claim shall be made until the discovery of the

vein or lode within the limits of the claim located. No claim shall extend more than three hundred feet on each side of the middle of the vein at the surface, nor shall any claim be limited by any mining regulation to less than twenty-five feet on each side of the middle of the vein at the surface, except where adverse rights existing on the tenth day of May, eighteen hundred and seventy-two, render such limitation necessary. The end lines of each claim shall be parallel to each other.

Locator's Rights of Possession and Enjoyment

10 May, 1872, c. 152, s. 3, v. 17, p. 91

SEC. 2322. The locators of all mining locations heretofore made, or which shall hereafter be made, on any mineral vein, lode, or ledge, situated on the public domain, their heirs and assigns, where no adverse claim exists on the tenth day of May, eighteen hundred and seventy-two, so long as they comply with the laws of the United States, and with State, Territorial, and local regulations not in conflict with the laws of the United States governing their possessory title, shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations, and of all veins, lodes, and ledges throughout their entire depth, the top or apex of which lies inside of such surface lines extended downward vertically, although such veins, lodes, or ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side lines of such surface locations. But their right of possession to such outside parts of such veins or ledges shall be confined to such portions thereof as lie between vertical planes drawn downward as above described, through the end lines of their locations, so continued in their own direction that such planes will intersect such exterior parts of such veins or ledges. And nothing in this section shall authorize the locator or possessor of a vein or lode which extends in its downward course beyond the vertical lines of his claim to enter upon the surface of a claim owned or possessed by another.

LAND OFFICE REGULATIONS

NATURE AND EXTENT OF MINING CLAIMS

1. Mining claims are of two distinct classes: Lode claims and placers.

LODE CLAIMS

2. The status of lode claims located or patented previous to the 10th day of May, 1872, is not changed with regard to their extent along the lode or width of surface; but the claim is enlarged by sections 2322 and 2328, by investing the locator, his heirs or assigns, with the right to follow, upon the conditions stated therein, all veins, lodes, or ledges, the top or apex of which lies inside of the surface lines of his claim.

3. It is to be distinctly understood, however, that the law limits the possessory right to veins, lodes, or ledges, *other* than the one named in the original location, to such as were not *adversely claimed on May* 10, 1872, and that where such other vein or ledge was so adversely claimed at that date the right of the party so adversely claiming is in no way impaired by the provisions of the Revised Statues.

4. From and after the 10th May, 1872, any person who is a citizen of the

United States, or who has declared his intention to become a citizen, may locate, record, and hold a mining clain of *fifteen hundred linear feet* along the course of any mineral vein or lode subject to location; or an association of persons, severally qualified as above, may make joint location of such claim of *fifteen hundred feet*, but in no event can a location of a vein or lode made after the 10th day of May, 1872, exceed fifteen hundred feet along the course thereof, whatever may be the number of persons composing the association.

Proof of Citizenship

10 May, 1872, c. 152, s. 7, v. 17, p. 94

SEC. 2321. Proof of citizenship, under this chapter, may consist, in the case of an individual, of his own affidavit thereof; in the case of an association of persons unincorporated, of the affidavit of their authorized agent, made on his own knowledge or upon information and belief; and in the case of a corporation organized under the laws of the United States, or of any State or Territory thereof, by the filing of a certified copy of their charter or certificate of incorporation.

LAND OFFICE REGULATIONS

66. The proof necessary to establish the citizenship of applicants for mining patents must be made in the following manner: In case of an incorporated company, a certified copy of their charter or certificate of incorporation must be filed. In case of an association of persons unincorporated, the affidavit of their duly authorized agent, made upon his own knowledge or upon information and belief, setting forth the residence of each person forming such association, must be submitted. This affidavit must be accompanied by a power of attorney from the parties forming such association, authorizing the person who makes the affidavit of citizenship to act for them in the matter of their application for patent.

67. In case of an individual or an association of individuals who do not appear by their duly authorized agent, the affidavit of each applicant, showing whether he is a native or naturalized citizen, when and where born, and his residence will be required.

68. In case an applicant has declared his intention to become a citizen or has been naturalized, his affidavit must show the date, place, and the court before which he declared his intention, or from which his certificate of citizenship issued, and present residence.

69. The affidavit of the claimant as to his citizenship may be taken before the register or receiver, or any other officer authorized to administer oaths within the land district; or, if the claimant is residing beyond the limits of the district, the affidavit may be taken before the clerk of any court of record or before any notary public of any State or Territory.

70. If citizenship is established by the testimony of disinterested persons, such testimony may be taken at any place before any person authorized to administer oaths, and whose official character is duly verified.

Owners of Tunnels, Rights of

10 May, 1872, c. 152, s. 4, v. 17, p. 92

SEC. 2323. Where a tunnel is run for the development of a vein or lode, or for the discovery of mines, the owners of such tunnel shall have the right

of possession of all veins or lodes within three thousand feet from the face of such tunnel on the line thereof, not previously known to exist, discovered in such tunnel, to the same extent as if discovered from the surface; and locations on the line of such tunnel of veins or lodes not appearing on the surface, made by other parties after the commencement of the tunnel, and while the same is being prosecuted with reasonable diligence, shall be invalid, but failure to prosecute the work on the tunnel for six months shall be considered as an abandonment of the right to all undiscovered veins on the line of such tunnel.

LAND OFFICE REGULATIONS

TUNNELS

16. The effect of section 2323, Revised Statutes, is to give the proprietors of a mining tunnel run in good faith the possessory right to fifteen hundred feet of any blind lodes cut, discovered, or intersected by such tunnel, which were not previously known to exist, within three thousand feet from the face or point of commencement of such tunnel, and to prohibit other parties, after the commencement of the tunnel, from prospecting for and making locations of lodes on the *line thereof* and within said distance of three thousand feet, unless such lodes appear upon the surface or were previously known to exist. The term "face," as used in said section, is construed and held to mean the first working face formed in the tunnel, and to signify the point at which the tunnel actually enters cover; it being from this point that the three thousand feet are to be counted upon which prospecting is prohibited as aforesaid.

17. To avail themselves of the benefits of this provision of law, the proprietors of a mining tunnel will be required, at the time they enter cover as aforesaid, to give proper notice of their tunnel location by erecting a substantial post, board, or monument at the face or point of commencement thereof, upon which should be posted a good and sufficient notice, giving the names of the parties or company claiming the tunnel right; the actual or proposed course or direction of the tunnel; the height and width thereof, and the course and distance from such face or point of commencement to some permanent well-known objects in the vicinity by which to fix and determine the locus in manner heretofore set forth applicable to locations of veins or lodes, and at the time of posting such notice they shall, in order that miners or prospectors may be enabled to determine whether or not they are within the lines of the tunnel, establish the boundary lines thereof, by stakes or monuments placed along such lines at proper intervals, to the terminus of the three thousand feet from the face or point of commencement of the tunnel, and the lines so marked will define and govern as to the specific boundaries within which prospecting for lodes not previously known to exist is prohibited while work on the tunnel is being prosecuted with reasonable diligence.

18. A full and correct copy of such notice of location defining the tunnel claim must be filed for record with the mining recorder of the district, to which notice must be attached the sworn statement or declaration of the owners, claimants, or projectors of such tunnel, setting forth the facts in the

case; stating the amount expended by themselves and their predecessors in interest in prosecuting work thereon; the extent of the work performed, and that it is *bona fide*, their intention to prosecute work on the tunnel so located and described with reasonable diligence for the development of a vein or lode, or for the discovery of mines, or both, as the case may be. This notice of location must be duly recorded, and, with the said sworn statement attached, kept on the recorder's files for future reference.

Regulations Made by Miners

10 May, 1872, c. 152, s. 5, v. 17, p. 92

Sec. 2324. The miners of each mining district may make regulations not in conflict with the laws of the United States, or with the laws of the State or Territory in which the district is situated, governing the location, manner of recording, amount of work necessary to hold possession of a mining claim, subject to the following requirements: The location must be distinctly marked on the ground so that its boundaries can be readily traced. All records of mining claims hereafter made shall contain the name or names of the locators, the date of the location, and such a description of the claim or claims located by reference to some natural object or permanent monument as will identify the claim. On each claim located after the tenth day of May, eighteen hundred and seventy-two, and until a patent has been issued therefor, not less than one hundred dollars' worth of labor shall be performed or improvements made during each year. On all claims located prior to the tenth day of May, eighteen hundred and seventy-two, ten dollars' worth of labor shall be performed or improvements made by the tenth day of June, eighteen hundred and seventy-four, and each year thereafter, for each one hundred feet in length along the vein until a patent has been issued therefor; but where such claims are held in common, such expenditure may be made upon any one claim; and upon a failure to comply with these conditions, the claim or mine upon which such failure occurred shall be open to relocation in the same manner as if no location of the same had ever been made, provided that the original locators, their heirs, assigns, or legal representatives, have not resumed work upon the claim after failure and before such location. Upon the failure of any one of several coowners to contribute his proportion of the expenditures required hereby, the coowners who have performed the labor or made the improvements may, at the expiration of the year, give such delinquent coowner personal notice in writing or notice by publication in the newspaper published nearest the claim, for at least once a week for ninety days, and if at the expiration of ninety days after such notice in writing or by publication such delinquent should fail or refuse to contribute his proportion of the expenditure required by this section, his interest in the claim shall become the property of his coowners who have made the required expenditures.

This section was amended Feb. 11, 1875, as follows:

Money Expended in a Tunnel Considered as Expended on the Lode

Act of Congress approved February 11, 1875 (18 Stat. L., 315)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section two thousand three hundred and twenty-four of the Revised Statutes be, and the same is hereby, amended

so that where a person or company has or may run a tunnel for the purpose of developing a lode or lodes, owned by said person or company, the money so expended in said tunnel shall be taken and considered as expended on said lode or lodes, whether located prior to or since the passage of said act; and such person or company shall not be required to perform work on the surface of said lode or lodes in order to hold the same as required by said act.

This section was further amended Jan. 22, 1880, as follows:

On Unpatented Claims Period Commences on Jan. 1 Succeeding Date of Location

Act of Congress approved Jan. 22, 1880 (21 Stat. L., 61)

That section twenty-three hundred and twenty-four of the Revised Statutes of the United States be amended by adding the following words: "*Provided*, That the period within which the work required to be done annually on all unpatented mineral claims shall commence on the first day of January succeeding the date of location of such claim, and this section shall apply to all claims located since the tenth day of May, anno Domini eighteen hundred and seventy-two."

[Section 2324 was also modified, as to claims located prior to the passage of said Act of May 10, 1872, by an Act passed June 6, 1874, which provides: "that the time for the first annual expenditure on claims located prior to the passage of said Act shall be extended to the first day of January, eighteen hundred and seventy-five."

Its operation was further suspended during the year 1893 by Act of Congress, approved Nov. 3, 1893, and also during the year 1894 by Act of Congress, approved July 18, 1894; it being provided in each of said acts that the claimant or claimants of any mining location in order to secure the benefits of said acts must record in the office, where the location notice or certificate was filed on or before Dec. 31 of said years respectively, a notice that he or they in good faith intended to hold and work said claim, and Provided further that the provision of neither of said acts should apply to the State of South Dakota.]

LAND OFFICE REGULATIONS

5. With regard to the extent of surface ground adjoining a vein or lode, and claimed for the convenient working thereof, the Revised Statutes provide that the lateral extent of locations of veins or lodes made after May 10, 1872, shall in no case *exceed three hundred feet on each side of the middle of the vein at the surface*, and that no such surface rights shall be limited by any mining regulations to less than twenty-five feet on each side of the middle of the vein at the surface, except where adverse rights existing on the 10th May, 1872, may render such limitation necessary; the end lines of such claims to be in all cases parallel to each other. Said lateral measurements cannot extend beyond three hundred feet on *either* side of the middle of the vein at the surface, or such distance as is allowed by local laws. For example: 400 feet cannot be taken on one side and 200 feet on the other. If, however, 300 feet on each side are allowed, and by reason of prior claims but 100 feet can be taken on one side, the locator will not be restricted to less than 300 feet on the other side; and when the locator does not determine by exploration *where* the middle of the vein at the surface is, his discovery shaft must be assumed to mark such point.

6. By the foregoing it will be perceived that no lode claim located after the 10th May, 1872, can exceed a parallelogram fifteen hundred feet in length by six hundred feet in width, but whether surface ground of that width can be taken depends upon the local regulations or State or Territorial laws in

force in the several mining districts; and that no such local regulations or State or Territorial laws shall limit a vein or lode claim to less than fifteen hundred feet along the course thereof, whether the location is made by one or more persons, nor can surface rights be limited to less than fifty feet in width unless adverse claims existing on the 10th day of May, 1872, render such lateral limitation necessary.

7. Locators cannot exercise too much care in defining their locations at the outset, inasmuch as the law requires that all records of mining locations made subsequent to May 10, 1872, shall contain the name or names of the locators, the date of the location, and such a *description of the claim or claims* located, by reference to some natural object of permanent monument, as will identify the claim.

8. No lode claim shall be located until after the discovery of a vein or lode within the limits of the claim, the object of which provision is evidently to prevent the appropriation of presumed mineral ground for speculative purposes, to the exclusion of *bona fide* prospectors, before sufficient work has been done to determine whether a vein or lode really exists.

9. The claimant should, therefore, prior to locating his claim, unless the vein can be traced upon the surface, sink a shaft or run a tunnel or drift to a sufficient depth therein to discover and develop a mineral-bearing vein, lode, or crevice; should determine, if possible, the general course of such vein in either direction from the point of discovery, by which direction he will be governed in marking the boundaries of his claim on the surface. His location notice should give the course and distance as nearly as practicable from the discovery shaft on the claim to some permanent, well-known points or objects, such, for instance, as stone monuments, blazed trees, the confluence of streams, point of intersection of well-known gulches, ravines, or roads, prominent buttes, hills, etc., which may be in the immediate vicinity, and which will serve to perpetuate and fix the *locus* of the claim and render it susceptible of identification from the description thereof given in the record of locations in the district, and should be duly recorded.

10. In addition to the foregoing data, the claimant should state the names of adjoining claims, or, if none adjoin, the relative positions of the nearest claims; should drive a post or erect a monument of stones at each corner of his surface ground, and at the point of discovery or discovery shaft should fix a post, stake, or board, upon which should be designated the name of the lode, the name or names of the locators, the number of feet claimed, and in which direction from the point of discovery; it being essential that the location notice filed for record, in addition to the foregoing description, should state whether the entire claim of fifteen hundred feet is taken on one side of the point of discovery, or whether it is partly upon one and partly upon the other side thereof, and in the latter case, how many feet are claimed upon each side of such discovery point.

11. The location notice must be filed for record in all respects as required by the State or Territorial laws and local rules and regulations, if there be any.

12. In order to hold the possessory title to a mining claim located prior to May 10, 1872, the law requires that *ten dollars* shall be expended annually in labor or improvements for each *one hundred feet* in length along the vein

or lode. In order to hold the possessory right to a location made since May 10, 1872, not less than one hundred dollars' worth of labor must be performed or improvements made thereon annually. Under the provisions of the act of Congress approved January 22, 1880, the first annual expenditure becomes due and must be performed during the calendar year succeeding that in which the location was made. Where a number of contiguous claims are held in common, the aggregate expenditure that would be necessary to hold all the claims may be made upon any one claim. Cornering locations are held to be contiguous.

13. Failure to make the expenditure or perform the labor required upon a location made before or since May 10, 1872, will subject a claim to relocation, unless the original locator, his heirs, assigns, or legal representatives, have resumed work after such failure and before relocation.

14. Annual expenditure is not required subsequent to entry, the date of issuing the patent certificate being the date contemplated by statute.

15. Upon the failure of any one of several coowners to contribute his proportion of the required expenditures, the coowners, who have performed the labor or made the improvements as required, may, at the expiration of the year, give such delinquent coowner personal notice in writing, or notice by publication in the newspaper published nearest the claim for at least once a week for ninety days; and if upon the expiration of ninety days after such notice in writing, or upon the expiration of one hundred and eighty days after the first newspaper publication of notice, the delinquent coowner shall have failed to contribute his proportion to meet such expenditures or improvements, his interest in the claim by law passes to his coowners who have made the expenditures or improvements as aforesaid. Where a claimant alleges ownership of a forfeited interest under the foregoing provision, the sworn statement of the publisher as to the facts of publication, giving dates and a printed copy of the notice published, should be furnished, and the claimant must swear that the delinquent coowner failed to contribute his proper proportion within the period fixed by the statute.

Patents for Mineral Lands — How Obtained

10 May, 1872, c. 152, s. 6, v. 17, p. 92

SEC. 2325. A patent for any land claimed and located for valuable deposits may be obtained in the following manner: Any person, association, or corporation authorized to locate a claim under this chapter, having claimed and located a piece of land for such purposes, who has, or have, complied with the terms of this chapter, may file in the proper land office an application for a patent, under oath, showing such compliance, together with a plat and field notes of the claim or claims in common, made by or under the direction of the United States surveyor-general, showing accurately the boundaries of the claim or claims, which shall be distinctly marked by monuments on the ground, and shall post a copy of such plat, together with a notice of such application for a patent, in a conspicuous place on the land embraced in such plat previous to the filing of the application for a patent, and shall file an affidavit of at least two persons that such notice has been duly posted, and shall file a copy of the notice in such land office, and shall thereupon be en-

titled to a patent for the land, in the manner following: The register of the land office, upon the filing of such application, plat, field notes, notices, and affidavits, shall publish a notice that such application has been made, for the period of sixty days, in a newspaper to be by him designated as published nearest to such claim; and he shall also post such notice in his office for the same period. The claimant at the time of filing this application, or at any time thereafter, within the sixty days of publication, shall file with the register a certificate of the United States surveyor-general that five hundred dollars' worth of labor has been expended or improvements made upon the claim by himself or grantors; that the plat is correct, with such further description by such reference to natural objects or permanent monuments as shall identify the claim, and furnish an accurate description, to be incorporated in the patent. At the expiration of the sixty days of publication the claimant shall file his affidavit, showing that the plat and notice have been posted in a conspicuous place on the claim during such period of publication. If no adverse claim shall have been filed with the register and the receiver of the proper land office at the expiration of the sixty days of publication, it shall be assumed that the applicant is entitled to a patent, upon the payment to the proper officer of five dollars per acre, and that no adverse claim exists; and thereafter no objection from third parties to the issuance of a patent shall be heard, except it be shown that the applicant has failed to comply with the terms of this chapter.

This section was amended Jan. 22, 1880, as follows:

Application for Patent may be Made by Authorized Agent

That section twenty-three hundred and twenty-five of the Revised Statutes of the United States be amended by adding thereto the following words: "*Provided*, That where the claimant for a patent is not a resident of or within the land district wherein the vein, lode, ledge, or deposit sought to be patented is located, the application for patent and the affidavits required to be made in this section by the claimant for such patent may be made by his, her, or its authorized agent, where said agent is conversant with the facts sought to be established by said affidavits: *And provided*, That this section shall apply to all applications now pending for patents to mineral lands."

Description of Vein Claims on Surveyed and Unsurveyed Land

10 May, 1872, c. 152, s. 8, v. 17, p. 94, as amended April 28, 1904 (33 Stat., 545)

SEC. 2327. The description of vein or lode claims upon surveyed lands shall designate the location of the claims with reference to the lines of the public survey, but need not conform therewith; but where patents have been or shall be issued for claims upon unsurveyed lands, the surveyors-general, in extending the public survey, shall adjust the same to the boundaries of said patented claims so as in no case to interfere with or change the true location of such claims as they are officially established upon the ground. Where patents have issued for mineral lands, those lands only shall be segregated and shall be deemed to be patented which are bounded by the lines actually marked, defined, and established upon the ground by the monuments of the official survey upon which the patent grant is based, and surveyors-general in executing subsequent patent surveys, whether upon surveyed or unsur-

veyed lands, shall be governed accordingly. The said monuments shall at all times constitute the highest authority as to what land is patented, and in case of any conflict between the said monuments of such patented claims and the descriptions of said claims in the patents issued therefor the monuments on the ground shall govern, and the erroneous or inconsistent descriptions or calls in the patent descriptions shall give way thereto.

Pending Applications; Existing Rights

10 May, 1872, c. 152, s. 9, v. 17, p. 94

SEC. 2328. Applications for patents for mining-claims under former laws now pending may be prosecuted to a final decision in the General Land Office; but in such cases where adverse rights are not affected thereby, patents may issue in pursuance of the provisions of this chapter; and all patents for mining-claims upon veins or lodes heretofore issued shall convey all the rights and privileges conferred by this chapter where no adverse rights existed on the tenth day of May, eighteen hundred and seventy-two.

PROCEDURE TO OBTAIN PATENT TO MINERAL LANDS[1]

LODE CLAIMS

LAND OFFICE REGULATIONS

34. The claimant is required, in the first place, to have a correct survey of his claim made under authority of the surveyor-general of the State or Territory in which the claim lies, such survey to show with accuracy the exterior surface boundaries of the claim, which boundaries are required to be distinctly marked by monuments on the ground. Four plats and one copy of the original field notes in each case will be prepared by the surveyor-general; one plat and the original field notes to be retained in the office of the surveyor-general, one copy of the plat to be given the claimant for posting upon the claim, one plat and a copy of the field notes to be given the claimant for filing with the proper register, to be finally transmitted by that officer, with other papers in the case, to this office, and one plat to be sent by the surveyor-general to the register of the proper land district, to be retained on his files for future reference. As there is no resident surveyor-general for the State of Arkansas, applications for the survey of mineral claims in said State should be made to the Commissioner of this office, who, under the law, is *ex officio* the *U. S.* surveyor-general.

35. The survey and plat of mineral claims required to be filed in the proper land office with application for patent must be made subsequent to the recording of the location of the claim (if the laws of the State or Territory or the regulations of the mining district require the notice of location to be recorded), and when the original location is made by survey of a United States mineral surveyor such location survey cannot be substituted for that required by the statute, as above indicated.

36. The surveyors-general should designate all surveyed mineral claims by a progressive series of numbers, beginning with survey No. 37, irrespective as to whether they are situated on surveyed or unsurveyed lands, the claim to be so designated at date of issuing the order therefor, in addition to the

[1] See chap. XXII, p. 334, for forms and further procedure for obtaining patents.

local designation of the claim; it being required in all cases that the plat and field notes of the survey of a claim must, in addition to the reference to permanent objects in the neighborhood, describe the locus of the claim with reference to the lines of public surveys by a line connecting a corner of the claim with the nearest public corner of the United States surveys, unless such claim be on unsurveyed lands at a distance of more than two miles from such public corner, in which latter case it should be connected with a United States mineral monument. Such connecting line must not be more than *two miles* in length, and should be measured on the ground direct between the points, or calculated from actually surveyed traverse lines if the nature of the country should not permit direct measurement. If a regularly established survey corner is within two miles of a claim situated on unsurveyed lands, the connection should be made with such corner in preference to a connection with a United States mineral monument. The connecting line or traverse line must be surveyed by the mineral surveyor at the time of his making the particular survey, and be made a part thereof.

37. (*a*) Promptly upon the approval of a mineral survey the surveyor-general will advise both this office and the appropriate local land office, by letter (Form 4–286), of the date of approval, number of the survey, name and area of the claim, name and survey number of each approved mineral survey with which actually in conflict, name and address of the applicant for survey, and name of the mineral surveyor who made the survey; and will also briefly describe therein the *locus* of the claim, specifying each legal subdivision or portion thereof, when upon surveyed lands, covered in whole or in part by the survey: but hereafter no segregation of any such claim upon the official township-survey records will be made until mineral entry has been made and approved for patent, unless otherwise directed by this office.

(*b*) Upon application to make agricultural entry of the residue of any original lot or legal subdivision of forty acres, reduced by mining claims for which patent applications have been filed and which residue has been already relotted in accordance therewith, the local officers will accept and approve the application as usual, if found to be regular. When such an application is filed for any such original lot or subdivision, reduced in available area by duly asserted mining claims but not yet relotted accordingly, the local officers will promptly advise this office thereof; and will also report and identify any pending application for mineral patent, affecting such subdivision, which the agricultural applicant does not desire to contest. The surveyor-general will thereupon be advised by this office of such mining claims, or portions thereof, as are proper to be segregated, and directed to at once prepare, upon the usual drawing-paper township blank, diagram of amended township survey of such original lot of legal forty-acre subdivision so made fractional by such mineral segregation, designating the agricultural portion by appropriate lot number, beginning with No. 1 in each section and giving the area of each lot, and will forthwith transmit one approved copy to the local land office and one to this office. In the meantime the local officers will accept the agricultural application (if no other objection appears), suspend it with reservation of all rights of the applicant if continuously asserted by him, and upon receipt of amended township diagram will approve

the application (if then otherwise satisfactory) as of the date of filing, corrected to describe the tract as designated in the amended survey.

(c) The register and receiver will allow no agricultural claim for any portion of an original lot or legal forty-acre subdivision, where the reduced area is made to appear by reason of approved surveys of mining claims and for which applications for patent have not been filed, until there is submitted by such agricultural applicant a satisfactory showing that such surveyed claims are in fact mineral in character; and applications to have lands asserted to be mineral, or mining locations, segregated by survey, with the view to agricultural appropriation of the remainder, will be made to the register and receiver for submission to the Commissioner of the General Land Office, for his consideration and direction, and must be supported by the affidavit of the party in interest, duly corroborated by two or more disinterested persons, or by such other or further evidence as may be required in any case, that the lands sought to be segregated *as mineral* are in fact mineral in character: otherwise, in the absence of satisfactory showing in any such case, such original lot of legal subdivision will be subject to agricultural appropriation only. When any such showing shall be found to be satisfactory and the necessary survey is had, amended township diagram will be required and made as prescribed in the preceding section.

38. The following particulars should be observed in the survey of every mining claim:

(1) The exterior boundaries of the claim, the number of feet claimed along the vein, and, as nearly as can be ascertained, the direction of the vein, and the number of feet claimed on the vein in each direction from the point of discovery or other well-defined place, on the claim should be represented on the plat of survey and in the field notes.

(2) The intersection of the lines of the survey with the lines of conflicting prior surveys should be noted in the field notes and represented upon the plat.

(3) Conflicts with unsurveyed claims, where the applicant for survey does not claim the area in conflict, should be shown by actual survey.

(4) The total area of the claim embraced by the exterior boundaries should be stated, and also the area in conflict with each intersecting survey, substantially as follows:

	Acres
Total area of claim	10.50
Area in conflict with survey No. 302	1.56
Area in conflict with survey No. 948	2.33
Area in conflict with Mountain Maid lode mining claim, unsurveyed	1.48

It does not follow that because mining surveys are required to exhibit all conflicts with prior surveys the areas of conflict are to be excluded. The field notes and plat are made a part of the application for patent, and care should be taken that the description does not inadvertently exclude portions intended to be retained. The application for patent should state the portions to be excluded in express terms.

39. The claimant is then required to post a copy of the plat of such survey

in a conspicuous place upon the claim, together with notice of his intention to apply for a patent therefor, which notice will give the date of posting, the name of the claimant, the name of the claim, the number of the survey, the mining district and county, and the names of adjoining and conflicting claims as shown by the plat survey. Too much care cannot be exercised in the preparation of this notice, inasmuch as the data therein are to be repeated in the other notices required by the statute, and upon the accuracy and completeness of these notices will depend, in a great measure, the regularity and validity of the proceedings for patent.

40. After posting the said plat and notice upon the premises, the claimant will file with the proper register and receiver a copy of such plat and the field notes of survey of the claim, accompanied by the affidavit of at least two credible witnesses that such plat and notice are posted conspicuously upon the claim, giving the date and place of such posting; a copy of the *notice* so posted to be attached to and form a part of said affidavit.

41. Accompanying the field notes so filed must be the sworn statement of the claimant that he has the possessory right to the premises therein described, in virtue of a compliance by himself (and by his grantors, if he claims by purchase) with the mining rules, regulations, and customs of the mining district, State, or Territory, in which the claim lies, and with the mining laws of Congress; such sworn statement to narrate briefly, but as clearly as possible, the facts constituting such compliance, the origin of his possession, and the basis of his claim to a patent.

42. This sworn statement must be supported by a copy of the location notice, certified by the officer in charge of the records where the same is recorded, and where the applicant for patent claims the interests of others associated with him in making the location, or as a purchaser, in addition to the copy of the location notice, must be furnished a complete abstract of title as shown by the record in the office where the transfers are by law required to be recorded, certified to by the officer in charge of the record under his official seal. The officer should also certify that no conveyances affecting the title to the claim in question appear of record other than those set forth in the abstract, which abstract shall be brought down to the date of the application for patent. Where the applicant claims as sole locator and does not furnish an abstract of title, his affidavit should be furnished to the effect that he has disposed of no interest in the land located.

43. In the event of the mining records in any case having been destroyed by fire or otherwise lost, affidavit of the fact should be made, and secondary evidence of possessory title will be received, which may consist of the affidavit of the claimant, supported by those of any other parties cognizant of the facts relative to his location, occupancy, possession, improvements, etc.; and in such case of lost records, any deeds, certificates of location or purchase, or other evidence which may be in the claimant's possession and tend to establish his claim, should be filed.

44. Before receiving and filing an application for mineral patent, local officers will be particular to see that it includes no land which is embraced in a prior or pending application for patent or entry, or for any lands embraced in a railroad selection, or for which publication is pending or has been

made by any other claimants, and if, in their opinion, after investigation, it should appear that a mineral application should not, for these or other reasons, be accepted and filed, they should formally reject the same, giving the reasons therefor, and allow the applicant thirty days for appeal to this office under the Rules of Practice.

Local officers will give prompt and appropriate notice to the railroad grantee of the filing of every application for mineral patent which embraces any portion of an odd-numbered section of surveyed lands within the primary limits of a railroad land grant, and of *every* such application embracing *any* portion of unsurveyed lands within such limits (except as to any such application which embraces a portion or portions of those ascertained or prospective odd-numbered sections only, within the limits of the grant in Montana and Idaho to the Northern Pacific Railroad Company, which have been classified as mineral under the act of February 26, 1895, without protest by the company within the time limited by the statute or the mineral classification whereof has been approved).

Should the railroad grantee file protest and apply for a hearing to determine the character of the land involved in any such application for mineral patent, proceedings thereunder will be had in the usual manner.

Any application for mineral patent, however, which embraces lands previously listed or selected by a railroad company will be disposed of as provided by the first section of this paragraph, and the applicant afforded opportunity to protest and apply for a hearing or to appeal.

Notice should be given to the duly authorized representative of the railroad grantee, in accordance with rule 17 of Practice. When the claims applied for are upon unsurveyed land, the burden of proving that they are situate within prospective odd-numbered sections will rest upon the railroad.

Evidence of service of notice should be filed with the record in each case.

45. Upon the receipt of these papers, if no reason appears for rejecting the application, the register will, at the expense of the claimant (who must furnish the agreement of the publisher to hold applicant for patent alone responsible for charges of publication), publish a notice of such application for the period of sixty days in a newspaper published nearest to the claim, and will post a copy of such notice in his office for the same period. When the notice is published in a *weekly* newspaper, nine consecutive insertions are necessary; when in a *daily* newspaper, the notice must appear in each issue for sixty-one consecutive issues. In both cases the first day of issue must be excluded in estimating the period of sixty days.

46. The notices so published and posted must embrace all the data given in the notice posted upon the claim. In addition to such data the published notice must further indicate the locus of the claim by giving the connecting line, as shown by the field notes and plat, between a corner of the claim and a United States mineral monument or a corner of the public survey, and thence the boundaries of the claim by courses and distances.

47. The register shall publish the notice of application for patent in a paper of established character and general circulation, to be by him designated as being the newspaper published nearest the land.

48. The claimant at the time of filing the application for patent, or at

any time within the sixty days of publication, is required to file with the register a certificate of the surveyor-general that not less than five hundred dollars' worth of labor has been expended or improvements made, by the applicant or his grantors, upon each location embraced in the application, or if the application embraces several contiguous locations held in common, that an amount equal to five hundred dollars for each location has been so expended upon, and for the benefit of, the entire group; that the plat filed by the claimant is correct; that the field notes of the survey, as filed, furnish such an accurate description of the claim as will, if incorporated in a patent, serve to fully identify the premises and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the *locus* thereof: *Provided*, That as to all applications for patent made and passed to entry before July 1, 1898, or which are by protests or adverse claims prevented from being passed to entry before that time, where the application embraces several locations held in common, proof of an expenditure of five hundred dollars upon the group will be sufficient, and an expenditure of that amount need not be shown to have been made upon, or for the benefit of, each location embraced in the application.

49. The surveyor-general may derive his information upon which to base his certificate as to the value of labor expended or improvements made from the mineral surveyor who makes the actual survey and examination upon the premises, and such mineral surveyor should specify with particularity and full detail the character and extent of such improvements, but further or other evidence may be required in any case.

50. It will be convenient to have this certificate indorsed by the surveyor-general, both upon the plat and field notes of survey filed by the claimant as aforesaid.

51. After the sixty days' period of newspaper publication has expired, the claimant will furnish from the office of publication a sworn statement that the notice was published for the statutory period, giving the first and last day of such publication, and his own affidavit showing that the plat and notice aforesaid remained conspicuously posted upon the claim sought to be patented during said sixty days' publication, giving the dates.

52. Upon the filing of this affidavit the register will, if no adverse claim was filed in his office during the period of publication and no other objection appears, permit the claimant to pay for the land to which he is entitled at the rate of five dollars for each acre and five dollars for each fractional part of an acre, except as otherwise provided by law, the receiver issuing the usual duplicate receipt therefor. The claimant will also make a sworn statement of all charges and fees paid by him for publication and surveys, together with all fees and money paid the register and receiver of the land office, after which the complete record will be forwarded to the Commissioner of the General Land Office and a patent issued thereon if found regular.

53. At any time prior to the issuance of patent, protest may be filed against the patenting of the claim as applied for, upon any ground tending to show that the applicant has failed to comply with the law in any matter essential to a valid entry under the patent proceedings. Such protest cannot, however, be made the means of preserving a surface conflict lost by failure

to adverse or lost by the judgment of the court in an adverse suit. One holding a present joint interest in a mineral location included in an application for patent who is excluded from the application, so that his interest would not be protected by the issue of patent thereon, may protest against the issuance of a patent as applied for, setting forth in such protest the nature and extent of his interest in such location, and such a protestant will be deemed a party in interest entitled to appeal. This results from the holding that a coowner excluded from an application for patent does not have an "adverse" claim within the meaning of sections 2325 and 2326 of the Revised Statutes. See Turner *v.* Sawyer, 150 U. S., 578–586.

54. Any party applying for patent as *trustee* must disclose fully the nature of the trust and the name of the *cestui que trust;* and such trustee, as well as the beneficiaries, must furnish satisfactory proof of citizenship; and the names of beneficiaries, as well as that of the trustee, must be inserted in the final certificate of entry.

55. The annual expenditure of one hundred dollars in labor or improvements on a mining claim, required by section 2324 of the Revised Statutes, is solely a matter between rival or adverse claimants to the same mineral land, and goes only to the right of possession, the determination of which is committed exclusively to the courts.

56. The failure of an applicant for patent to a mining claim to prosecute his application to completion, by filing the necessary proofs and making payment for the land, within a reasonable time after the expiration of the period of publication of notice of the application, or after the termination of adverse proceedings in the courts, constitutes a waiver by the applicant of all rights obtained by the earlier proceedings upon the application.

57. The proceedings necessary to the completion of an application for patent to a mining claim, against which an adverse claim or protest has been filed, if taken by the applicant at the first opportunity afforded therefor under the law and departmental practice, will be as effective as if taken at the date when, but for the adverse claim or protest, the proceedings on the application could have been completed.

Placer Claims

58. The proceedings to obtain patents for placer claims, including all forms of mineral deposits excepting veins of quartz or other rock in place, are similar to the proceedings prescribed for obtaining patents for vein or lode claims; but where a placer claim shall be upon surveyed lands, and conforms to legal subdivisions, no further survey or plat will be required. Where placer claims cannot be conformed to legal subdivisions, survey and plat shall be made as on unsurveyed lands.

59. The proceedings for obtaining patents for veins or lodes having already been fully given, it will not be necessary to repeat them here, it being thought that careful attention thereto by applicants and the local officers will enable them to act understandingly in the matter, and make such slight modifications in the notice, or otherwise, as may be necessary in view of the different nature of the two classes of claims; the price of placer claims being fixed, however, at two dollars and fifty cents per acre, or fractional part of an acre.

60. In placer applications for patent care must be exercised to determine the proper classification of the lands claimed. To this end the clearest evidence of which the case is capable should be presented.

(1) If the claim be all placer ground, that fact must be stated in the application and corroborated by accompanying proofs; if of mixed placers and lodes, it should be so set out, with a description of all known lodes situated within the boundaries of the claim. A specific declaration, such as is required by section 2333, Revised Statutes, must be furnished as to each lode intended to be claimed. All other known lodes are, by the silence of the applicant, excluded by law from all claim by him, of whatsoever nature, possessory or otherwise.

(2) Mineral surveyors shall, at the expense of the parties, make full examination of all placer claims surveyed by them, and duly note the facts as specified in the law, stating the quality and composition of the soil, the kind and amount of timber and other vegetation, the locus and size of streams, and such other matters as may appear upon the surface of the claim. This examination should include the character and extent of all surface and underground workings, whether placer or lode, for mining purposes.

(3) In addition to these data, which the law requires to be shown in all cases, the deputy should report with reference to the proximity of centers of trade or residence; also of well-known systems of lode deposit or of individual lodes. He should also report as to the use or adaptability of the claim for placer mining; whether water has been brought upon it in sufficient quantity to mine the same, or whether it can be procured for that purpose; and, finally, what works or expenditures have been made by the claimant or his grantors for the development of the claim, and their situation and location with respect to the same as applied for.

(4) This examination should be reported by the mineral surveyor under oath to the surveyor-general, and duly corroborated; and a copy of the same should be furnished with the application for patent to the claim, constituting a part thereof, and included in the oath of the applicant.

(5) Applications awaiting entry, whether published or not, must be made to conform to these regulations, with respect to examination as to the character of the land. Entries already made will be suspended for such additional proofs as may be deemed necessary in each case.

71. No entry will be allowed until the register has satisfied himself, by careful examination, that proper proofs have been filed upon the points indicated in the law and official regulations. Transfers made subsequent to the filing of the application for patent will not be considered, but entry will be allowed and patent issued in all cases in the name of the applicant for patent, the title conveyed by the patent, of course, in each instance inuring to the transferee of such applicant where a transfer has been made pending the application for patent.

72. The consecutive series of numbers of mineral entries must be continued, whether the same are of lode or placer claims or mill sites.

73. In sending up the papers in a case the register must not omit certifying to the fact that the notice was posted in his office for the full period of sixty days, such certificate to state distinctly when such posting was done

and how long continued. The plat forwarded as part of the proof should not be *folded*, but *rolled*, so as to prevent creasing, and either transmitted in a separate package or so enclosed with the other papers that it may pass through the mails without creasing or mutilation. If forwarded separately, the letter transmitting the papers should state the fact.

Adverse Claim — Proceedings on

10 May, 1872, c. 152, s. 7, v. 17, p. 93

SEC. 2326. Where an adverse claim is filed during the period of publication, it shall be upon oath of the person or persons making the same, and shall show the nature, boundaries, and extent of such adverse claim, and all proceedings, except the publication of notice and making and filing of the affidavit thereof, shall be stayed until the controversy shall have been settled or decided by a court of competent jurisdiction, or the adverse claim waived. It shall be the duty of the adverse claimant, within thirty days after filing his claim, to commence proceedings in a court of competent jurisdiction, to determine the question of the right of possession, and prosecute the same with reasonable diligence to final judgment; and a failure so to do shall be a waiver of his adverse claim. After such judgment shall have been rendered, the party entitled to the possession of the claim, or any portion thereof, may, without giving further notice, file a certified copy of the judgment roll with the register of the land office, together with the certificate of the surveyor-general that the requisite amount of labor has been expended or improvements made thereon, and the description required in other cases, and shall pay to the receiver five dollars per acre for his claim, together with the proper fees, whereupon the whole proceedings and the judgment roll shall be certified by the register to the Commissioner of the General Land Office, and a patent shall issue thereon for the claim, or such portion thereof as the applicant shall appear, from the decision of the court, to rightly possess. If it appears from the decision of the court that several parties are entitled to separate and different portions of the claim, each party may pay for his portion of the claim with the proper fees, and file the certificate and description by the surveyor-general, whereupon the register shall certify the proceedings and judgment roll to the Commissioner of the General Land Office, as in the preceding case, and patents shall issue to the several parties according to their respective rights. Nothing herein contained shall be construed to prevent the alienation of a title conveyed by a patent for a mining claim to any person whatever.

This section was amended by Act of March 3, 1881, as follows:

In Action Brought Title not Established in Either Party

That if, in any action brought pursuant to section twenty-three hundred and twenty-six of the Revised Statutes, title to the ground in controversy shall not be established by either party, the jury shall so find, and judgment shall be entered according to the verdict. In such case costs shall not be allowed to either party, and the claimant shall not proceed in the land office or be entitled to a patent for the ground in controversy until he shall have perfected his title.

This section was further amended by Act of April 26, 1882, as follows:

Adverse Claim may be Verified by Agent

That the adverse claim required by section twenty-three hundred and twenty-six of the Revised Statutes may be verified by the oath of any duly authorized agent or attorney in fact of the adverse claimant cognizant of the facts stated; and the adverse claimant, if residing or at the time being beyond the limits of the district wherein the claim is situated, may make oath to the adverse claim before the clerk of any court of record of the United States or the State or Territory where the adverse claimant may then be, or before any notary public of such State or Territory.

LAND OFFICE REGULATIONS

ADVERSE CLAIMS

78. An adverse claim must be filed with the register and receiver of the land office where the application for patent was filed, or with the register and receiver of the district in which the land is situated at the time of filing the adverse claim. It must be on the oath of the adverse claimant, or it may be verified by the oath of any duly authorized agent or attorney in fact of the adverse claimant cognizant of the facts stated.

79. Where an agent or attorney in fact verifies the adverse claim, he must distinctly swear that he is such agent or attorney, and accompany his affidavit by proof thereof.

80. The agent or attorney in fact must make the affidavit in verification of the adverse claim within the land district where the claim is situated.

81. The adverse notice must fully set forth the nature and extent of the interference or conflict; whether the adverse party claims as a purchaser for valuable consideration or as a locator; if the former, a certified copy of the original location, the original conveyance, a duly certified copy thereof, or an abstract of title from the office of the proper recorder should be furnished, or if the transaction was a merely verbal one he will narrate the circumstances attending the purchase, the date thereof, and the amount paid, which facts should be supported by the affidavit of one or more witnesses, if any were present at the time, and if he claims as a locator he must file a duly certified copy of the location from the office of the proper recorder.

82. In order that the "*boundaries*" and "*extent*" of the claim may be shown, it will be incumbent upon the adverse claimant to file a plat showing his entire claim, its relative situation or position with the one against which he claims, and the extent of the conflict: *Provided, however,* That if the application for patent describes the claim by legal subdivisions, the adverse claimant, if also claiming by legal subdivisions, may describe his adverse claim in the same manner without further survey or plat. If the claim is not described by legal subdivisions, it will generally be more satisfactory if the plat thereof is made from an actual survey by a mineral surveyor, and its correctness officially certified thereon by him.

83. Upon the foregoing being filed within the sixty days' period of publication, the register, or in his absence the receiver, will immediately give notice in writing to *the parties* that such adverse claim has been filed, informing them that the party who filed the adverse claim will be required within thirty days from the date of such filing to commence proceedings in a court of competent

jurisdiction to determine the question of right of possession, and to prosecute the same with reasonable diligence to final judgment, and that, should such adverse claimant fail to do so, his adverse claim will be considered waived and the application for patent be allowed to proceed upon its merits.

84. When an adverse claim is filed as aforesaid, the register or receiver will indorse upon the same the precise date of filing, and preserve a record of the date of notifications issued thereon; and thereafter all proceedings on the application for patent will be stayed, with the exception of the completion of the publication and posting of notices and plat and the filing of the necessary proof thereof, until the controversy shall have been finally adjudicated in court, or the adverse claim waived or withdrawn.

85. Where an adverse claim has been filed and suit thereon commenced within the statutory period, and final judgment rendered determining the right of possession, it will not be sufficient to file with the register a certificate of the clerk of the court, setting forth the facts as to such judgment, but the successful party must, before he is allowed to make entry, file a certified copy of the judgment, together with the other evidence required by section 2326, Revised Statutes.

86. Where such suit has been dismissed, a certificate of the clerk of the court to that effect or a certified copy of the order of dismissal will be sufficient.

87. After an adverse claim has been filed and suit commenced, a relinquishment or other evidence of abandonment of the adverse claim will not be accepted, but the case must be terminated and proof thereof furnished as required by the last two paragraphs.

88. Where an adverse claim has been filed, but no suit commenced against the applicant for patent within the statutory period, a certificate to that effect by the clerk of the State court having jurisdiction in the case, and also by the clerk of the circuit court of the United States for the district in which the claim is situated, will be required.

Conformity of Placer Claims to Surveys — Limit of

9 July, 1870, c. 235, s. 12, v. 16, p. 317

SEC. 2329. Claims usually called "placers," including all forms of deposit, excepting veins of quartz, or other rock in place, shall be subject to entry and patent, under like circumstances and conditions, and upon similar proceedings, as are provided for vein or lode claims; but where the lands have been previously surveyed by the United States, the entry in its exterior limits shall conform to the legal subdivisions of the public lands.

Subdivisions of Ten Acre Tracts; Maximum of Placer Locations

9 July, 1870 c. 235, s. 12, v. 16, p. 217

SEC. 2330. Legal subdivisions of forty acres may be subdivided into ten-acre tracts; and two or more persons, or associations of persons, having contiguous claims of any size, although such claims may be less than ten acres each, may make joint entry thereof; but no location of a placer claim, made after the ninth day of July, eighteen hundred and seventy, shall exceed one hundred and sixty acres for any one person or association of persons,

which location shall conform to the United States surveys; and nothing in this section contained shall defeat or impair any bona fide preemption or homestead claim upon agricultural lands, or authorize the sale of the improvements of any bona fide settler to any purchaser.

Conformity of Placer Claims to Surveys — Limitation of Claims

10 May, 1872, c. 152, s. 10, v. 17, p. 94

SEC. 2331. Where placer claims are upon surveyed lands, and conform to legal subdivisions, no further survey or plat shall be required, and all placer-mining claims located after the tenth day of May, eighteen hundred and seventy-two, shall conform as near as practicable with the United States system of public-lands surveys, and the rectangular subdivisions of such surveys, and no such location shall include more than twenty acres for each individual claimant; but where placer claims cannot be conformed to legal subdivisions, survey and plat shall be made as on unsurveyed lands; and where by the segregation of mineral lands in any legal subdivision a quantity of agricultural land less than forty acres remains, such fractional portion of agricultural land may be entered by any party qualified by law, for homestead or preemption purposes.

LAND OFFICE REGULATIONS

PLACER CLAIMS

19. But one discovery of mineral is required to support a placer location, whether it be of twenty acres by an individual, or of one hundred and sixty acres or less by an association of persons.

20. The Act of August 4, 1892, extends the mineral-land laws so as to bring lands chiefly valuable for building stone within the provisions of said law by authorizing a placer entry of such lands. Registers and receivers should make a reference to said act on the entry papers in the case of all placer entries made for lands containing stone chiefly valuable for building purposes. Lands reserved for the benefit of public schools or donated to any State are not subject to entry under said act.

21. The Act of February 11, 1897, provides for the location and entry of public lands chiefly valuable for petroleum or other mineral oils, and entries of that nature made prior to the passage of said act are to be considered as though made thereunder.

22. By section 2330 authority is given for subdividing forty-acre legal subdivisions into ten-acre tracts. These ten-acre tracts should be considered and dealt with as legal subdivisions, and an applicant having a placer claim which conforms to one or more of such ten-acre tracts, contiguous in case of two or more tracts, may make entry thereof, after the usual proceedings, without further survey or plat.

23. In subdividing forty-acre legal subdivisions, the ten-acre tracts must be in square form, with lines at right angles with the lines of the public surveys; and the notice given of the application must be specific and accurate in description.

24. A ten-acre subdivision may be described, for instance if situated in the extreme northeast of the section, as the "NE. ¼ of the NE. ¼ of the NE. ¼" of the section, or, in like manner, by appropriate terms, wherever situated;

but, in addition to this description, the notice must give all the other data required in a mineral application, by which parties may be put on inquiry as to the land sought to be patented. The proofs submitted with applications must show clearly the character and extent of the improvements upon the premises.

25. The proof of improvements must show their value to be not less than *five hundred dollars* and that they were made by the applicant for patent or his grantors. This proof should consist of the affidavit of two or more disinterested witnesses. The annual expenditure to the amount of $100, required by section 2324, Revised Statutes, must be made upon placer claims as well as lode claims.

26. Applicants for patent to a placer claim, who are also in possession of a known vein or lode included therein, must state in their application that the placer includes such vein or lode. The published and posted notices must also include such statement. If veins or lodes lying within a placer location are owned by other parties, the fact should be distinctly stated in the application for patent, and in all the notices. But in all cases, whether the lode is claimed or excluded, it must be surveyed and marked upon the plat, the field notes and plat giving the area of the lode claim or claims and the area of the placer separately. An application which omits to claim such known vein or lode must be construed as a conclusive declaration that the applicant has no right of possession to the vein or lode. Where there is no known lode or vein, the fact must appear by the affidavit of two or more witnesses.

27. By section 2330 it is declared that no location of a placer claim, made after July 9, 1870, shall exceed one hundred and sixty acres for any one person or association of persons, which location shall conform to the United States surveys.

28. Section 2331 provides that all placer-mining claims located after May 10, 1872, shall conform as nearly as practicable with the United States system of public-land surveys and the rectangular subdivisions of such surveys, and such locations shall not include more than twenty acres for each individual claimant.

29. The foregoing provisions of law are construed to mean that after the 9th day of July, 1870, no location of a placer claim can be made to exceed one hundred and sixty acres, whatever may be the number of locators associated together, or whatever the local regulations of the district may allow; and that from and after May 10, 1872, no location can exceed twenty acres for each individual participating therein; that is, a location by two persons cannot exceed forty acres, and one by three persons cannot exceed sixty acres.

30. The regulations hereinbefore given as to the manner of marking locations on the ground, and placing the same on record, must be observed in the case of placer locations so far as the same are applicable, the law requiring, however, that all placer mining claims located after May 10, 1872, shall conform as near as practicable with the United States system of public land surveys and the rectangular subdivisions of such surveys, whether the locations are upon surveyed or unsurveyed lands.

What Evidence of Possession, etc., to Establish a Right to a Patent

9 July, 1870, c. 235, s. 13, v. 16, p. 217

SEC. 2332. Where such person or association, they and their grantors, have held and worked their claims for a period equal to the time prescribed by the statute of limitations for mining claims of the State or Territory where the same may be situated, evidence of such possession and working of the claims for such period shall be sufficient to establish a right to a patent thereto under this chapter, in the absence of any adverse claim; but nothing in this chapter shall be deemed to impair any lien which may have attached in any way whatever to any mining claim or property thereto attached prior to the issuance of a patent.

LAND OFFICE REGULATIONS

POSSESSORY RIGHT

74. The provisions of section 2332, Revised Statutes, will greatly lessen the burden of proof, more especially in the case of old claims located many years since, the records of which, in many cases, have been destroyed by fire, or lost in other ways during the lapse of time, but concerning the possessory right to which all controversy or litigation has long been settled.

75. When an applicant desires to make his proof of possessory right in accordance with this provision of law, he will not be required to produce evidence of location, copies of conveyances, or abstracts of title, as in other cases, but will be required to furnish a duly certified copy of the statute of limitation of mining claims for the State or Territory, together with his sworn statement giving a clear and succinct narration of the facts as to the origin of his title, and likewise as to the continuation of his possession of the mining ground covered by his application; the area thereof; the nature and extent of the mining that has been done thereon; whether there has been any opposition to his possession, or litigation with regard to his claim, and, if so, when the same ceased; whether such cessation was caused by compromise or by judicial decree, and any additional facts within the claimant's knowledge having a direct bearing upon his possession and bona fides which he may desire to submit in support of his claim.

76. There should likewise be filed a certificate, under seal of the court having jurisdiction of mining cases within the judicial district embracing the claim, that no suit or action of any character whatever involving the right of possession to any portion of the claim applied for is pending, and that there has been no litigation before said court affecting the title to said claim or any part thereof for a period equal to the time fixed by the statute of limitations for mining claims in the State or Territory as aforesaid, other than that which has been finally decided in favor of the claimant.

77. The claimant should support his narrative of facts relative to his possession, occupancy, and improvements by corroborative testimony of any disinterested person or persons of credibility who may be cognizant of the facts in the case and are capable of testifying understandingly in the premises.

Proceedings for Patent for Placer Claim, etc.

10 May, 1872, c. 152, s. 11, v. 17, p. 94

SEC. 2333. Where the same person, association, or corporation is in

possession of a placer claim, and also a vein or lode included within the boundaries thereof, application shall be made for a patent for the placer claim, with the statement that it includes such vein or lode, and in such case a patent shall issue for the placer claim, subject to the provisions of this chapter, including such vein or lode, upon the payment of five dollars per acre for such vein or lode claim and twenty-five feet of surface on each side thereof. The remainder of the placer claim, or any placer claim not embracing any vein or lode claim shall be paid for at the rate of two dollars and fifty cents per acre, together with all costs of proceedings; and where a vein or lode, such as is described in section twenty-three hundred and twenty, is known to exist within the boundaries of a placer claim, an application for a patent for such placer claim which does not include an application for the vein or lode claim shall be construed as a conclusive declaration that the claimant of the placer claim has no right of possession of the vein or lode claim; but where the existence of a vein or lode in a placer claim is not known, a patent for the placer claim shall convey all valuable mineral and other deposits within the boundaries thereof.

(Sec. 26 of the regulations of the Land Office, already given under secs. 2329–2331 of the Statutes, also has relation to the above section. See p. 376.)

Surveyor-General to Appoint Surveyors of Mining Claims etc.

10 May, 1872 c. 152, s. 12, v. 17, p. 95

SEC. 2334. The surveyor-general of the United States may appoint in each land-district containing mineral lands as many competent surveyors as shall apply for appointment to survey mining claims. The expenses of the survey of vein or lode claims, and the survey and subdivision of placer claims into smaller quantities than one hundred and sixty acres, together with the cost of publication of notices, shall be paid by the applicants, and they shall be at liberty to obtain the same at the most reasonable rates, and they shall also be at liberty to employ any United States deputy surveyor to make the survey. The Commissioner of the General Land Office shall also have power to establish the maximum charges for surveys and publication of notices under this chapter; and, in case of excessive charges for publication, he may designate any newspaper published in a land district where mines are situated for the publication of mining notices in such district, and fix the rates to be charged by such paper; and, to the end that the Commissioner may be fully informed on the subject, each applicant shall file with the register a sworn statement of all charges and fees paid by such applicant for publication and surveys, together with all fees and money paid the register and the receiver of the land office, which statement shall be transmitted, with the other papers in the case, to the Commissioner of the General Land Office.

LAND OFFICE REGULATIONS

APPOINTMENT OF DEPUTIES FOR SURVEY OF MINING CLAIMS.—CHARGES FOR SURVEYS AND PUBLICATIONS — FEES OF REGISTERS AND RECEIVERS, ETC.

89. Section 2334 provides for the appointment of surveyors to survey mining claims, and authorizes the Commissioner of the General Land Office to establish the rates to be charged for surveys and for newspaper publica-

tions. Under this authority of law the following rates have been established as the maximum charges for newspaper publications in mining cases:

(1) Where a daily newspaper is designated the charge shall not exceed seven dollars for each ten lines of space occupied, and where a weekly newspaper is designated as the medium of publication five dollars for the same space will be allowed. Such charge shall be accepted as full payment for publication in each issue of the newspaper for the entire period required by law.

It is expected that these notices shall not be so abbreviated as to curtail the description essential to a perfect notice, and the said rates established upon the understanding that they are to be in the usual body type used for advertisements.

(2) For the publication of citations in contests or hearings involving the character of lands the charges shall not exceed eight dollars for five publications in weekly newspapers, or ten dollars for publications in daily newspapers for thirty days.

90. The surveyors-general of the several districts will, in pursuance of said law, appoint in each land district as many competent surveyors for the survey of mining claims as may seek such appointment, it being distinctly understood that all expenses of these notices and surveys are to be borne by the mining claimants and not by the United States. The statute provides that the claimant shall also be at liberty to employ any United States deputy surveyor to make the survey. Each surveyor appointed to survey mining claims before entering upon the duties of his office or appointment shall be required to enter into a bond of not less than $1000 for the faithful performance of his duties.

91. With regard to the platting of the claim and other office work in the surveyor-general's office, that officer will make an estimate of the cost thereof, which amount the claimant will deposit with any assistant United States treasurer or designated depository in favor of the United States Treasurer, to be passed to the credit of the fund created by "individual depositors for surveys of the public lands," and file with the surveyor-general duplicate certificates of such deposit in the usual manner.

92. The surveyors-general will endeavor to appoint surveyors to survey mining claims, so that one or more may be located in each mining district for the greater convenience of miners.

93. The usual oaths will be required of these surveyors and their assistants as to the correctness of each survey executed by them.

The duty of the surveyor ceases when he has executed the survey and returned the field notes and preliminary plat thereof with his report to the surveyor-general. He will not be allowed to prepare for the mining claimant the papers in support of an application for patent, or otherwise perform the duties of an attorney before the land office in connection with a mining claim.

The surveyors-general and local land officers are expected to report any infringement of this regulation to this office.

94. Should it appear that excessive or exorbitant charges have been made by any surveyor or any publisher, prompt action will be taken with the view of correcting the abuse.

95. The fees payable to the register and receiver for filing and acting upon applications for mineral-land patents are five dollars to each officer, to be paid by the applicant for patent at the time of filing, and the like sum of five dollars is payable to each officer by an adverse claimant at the time of filing his adverse claim. (Sec. 2238, R. S., par. 9.)

96. At the time of payment of fee for mining application or adverse claim the receiver will issue his receipt therefor in duplicate, one to be given the applicant or adverse claimant, as the case may be, and one to be forwarded to the Commissioner of the General Land Office *on the day of issue*. The receipt for mining application should have attached the certificate of the register that the lands included in the application are subject to such appropriation, as far as shown by the records of his office.

97. The register and receiver will, at the close of each month, forward to this office an abstract of mining applications filed, an abstract of adverse claims filed, an abstract of mineral lands sold, and a report of receipts from such sales.

98. The fees and purchase money received by registers and receivers must be placed to the credit of the United States in the receiver's monthly and quarterly account, charging up in the disbursing account the sums to which the register and receiver may be respectively entitled as fees and commissions, with limitations in regard to the legal maximum.

Verification of Affidavits, etc.

10 May, 1872, c. 152, s. 13, v. 17, p. 95

SEC. 2335. All affidavits required to be made under this chapter may be verified before any officer authorized to administer oaths within the land-district where the claims may be situated, and all testimony and proofs may be taken before any such officer, and, when duly certified by the officer taking the same, shall have the same force and effect as if taken before the register and receiver of the land office. In cases of contest as to the mineral or agricultural character of land, the testimony and proofs may be taken as herein provided on personal notice of at least ten days to the opposing party; or if such party cannot be found, then by publication of at least once a week for thirty days in a newspaper, to be designated by the register of the land office as published nearest to the location of such land; and the register shall require proof that such notice has been given.

LAND OFFICE REGULATIONS

HEARINGS, TO DETERMINE CHARACTER OF LANDS

99. The Rules of Practice in cases before the United States district land offices, the General Land Office, and the Department of the Interior will, so far as applicable, govern in all cases and proceedings arising in contests and hearings to determine the character of lands.

100. Public land returned by the surveyor-general as mineral shall be withheld from entry as agricultural land until the presumption arising from such a return shall be overcome by testimony taken in the manner hereinafter described.

101. Hearings to determine the character of lands are practically of two kinds, as follows:

(1) Lands returned as mineral by the surveyor-general.

When such lands are sought to be entered as agricultural under laws which require the submission of final proof after due notice by publication and posting, the filing of the proper non-mineral affidavit in the absence of allegations that the land is mineral will be deemed sufficient as a preliminary requirement. A satisfactory showing as to character of land must be made when final proof is submitted.

In case of application to enter, locate, or select such lands as agricultural, under laws in which the submission of final proof after due publication and posting is *not* required, notice thereof must first be given by publication for sixty days and posting in the local office during the same period, and affirmative proof as to the character of the land submitted. In the absence of allegations that the land is mineral, and upon compliance with this requirement, the entry, location, or selection will be allowed, if otherwise regular.

(2) Lands returned as agricultural and alleged to be mineral in character.

Where as against the claimed right to enter such lands as agricultural it is alleged that the same are mineral, or are applied for as mineral lands, the proceedings in this class of cases will be in the nature of a contest, and the practice will be governed by the rules in force in contest cases.

[Paragraphs 102 to 104 inclusive, are omitted from the revision of May 21, 1907, of the Land Office Rules and Regulations "as appropriate instructions relative to non-mineral proofs in railroad, State and forest lieu selections are contained in separate circulars." These may be obtained by any one interested upon application to the Commissioner of the General Land Office.]

105. At the hearings under either of the aforesaid classes, the claimants and witnesses will be thoroughly examined with regard to the character of the land; whether the same has been thoroughly prospected; whether or not there exists within the tract or tracts claimed any lode or vein of quartz or other rock in place, bearing gold, silver, cinnabar, lead, tin, or copper, or other valuable deposit which has ever been claimed, located, recorded, or worked; whether such work is entirely abandoned, or whether occasionally resumed; if such lode does exist, by whom claimed, under what designation, and in which subdivision of the land it lies; whether any placer mine or mines exist upon the land; if so, what is the character thereof — whether of the shallow-surface description, or of the deep cement, blue lead, or gravel deposits; to what extent mining is carried on when water can be obtained, and what the facilities are for obtaining water for mining purposes; upon what particular ten-acre subdivisions mining has been done, and at what time the land was abandoned for mining purposes, if abandoned at all.

106. The testimony should also show the agricultural capacities of the land, what kind of crops are raised thereon, and the value thereof; the number of acres actually cultivated for crops of cereals or vegetables, and within which particular ten-acre subdivision such crops are raised; also which of these subdivisions embrace the improvements, giving in detail the extent and value of the improvements, such as house, barn, vineyard, orchard, fencing, etc., and mining improvements.

107. The testimony should be as full and complete as possible; and in

addition to the leading points indicated above, where an attempt is made to prove the mineral character of lands which have been entered under the agricultural laws, it should show at what date, if at all, valuable deposits of minerals were first known to exist on the lands.

108. When the case comes before this office, such decision will be made as the law and the facts may justify. In cases where a survey is necessary to set apart the mineral from the agricultural land, the proper party, *at his own expense*, will be required to have the work done by a reliable and competent surveyor to be designated by the surveyor-general. Application therefor must be made to the register and receiver, accompanied by description of the land to be segregated and the evidence of service upon the opposite party of notice of his intention to have such segregation made. The register and receiver will forward the same to this office, when the necessary instructions for the survey will be given. The survey in such case, where the claims to be segregated are vein or lode claims, must be executed in such manner as will conform to the requirements in section 2320, United States Revised Statutes, as to length and width and parallel end lines.

109. Such survey when executed must be properly sworn to by the surveyor, either before a notary public, officer of a court of record, or before the register or receiver, the deponent's character and credibility to be properly certified to by the officer administering the oath.

110. Upon the filing of the plat and field notes of such survey with the register and receiver, duly sworn to as aforesaid, they will transmit the same to the surveyor-general for his verification and approval; who, if he finds the work correctly performed, will furnish authenticated copies of such plat and description both to the proper local land office and to this office, made upon the usual drawing-paper township blank.

The copy of plat furnished the local office and this office must be a diagram verified by the surveyor-general, showing the claim or claims segregated, and designating the separate fractional agricultural tracts in each 40-acre legal subdivision by the proper lot number, beginning with No. 1 in each section, and giving the area in each lot, the same as provided in paragraph 37 in the survey of mining claims on surveyed lands.

111. The fact that a certain tract of land is decided upon testimony to be mineral in character is by no means equivalent to an award of the land to a miner. In order to secure a patent for such land, he must proceed as in other cases, in accordance with the foregoing regulations.

Blank forms for proofs in mineral cases are not furnished by the General Land Office.

Where Veins Intersect, etc.

10 May, 1872, c. 152, s. 14, v. 17, p. 96

SEC. 2336. Where two or more veins intersect or cross each other, priority of title shall govern, and such prior location shall be entitled to all ore or mineral contained within the space of intersection; but the subsequent location shall have the right of way through the space of intersection for the purposes of the convenient working of the mine. And where two or more veins unite, the oldest or prior location shall take the vein below the point of union, including all the space of intersection.

Patents for Non-Mineral Lands, etc.

10 May, 1872, c. 152, s. 15, v. 17, p. 96

SEC. 2337. Where non-mineral land not contiguous to the vein or lode is used or occupied by the proprietor of such vein or lode for mining or milling purposes, such non-adjacent surface ground may be embraced and included in an application for a patent for such vein or lode, and the same may be patented therewith, subject to the same preliminary requirements as to survey and notice as are applicable to veins or lodes; but no location hereafter made of such non-adjacent land shall exceed five acres, and payment for the same must be made at the same rate as fixed by this chapter for the superficies of the lode. The owner of a quartz-mill or reduction works, not owning a mine in connection therewith, may also receive a patent for his mill site, as provided in this section.

LAND OFFICE REGULATIONS

MILL SITES

61. Land entered as a mill site must be shown to be non-mineral. Mill sites are simply auxiliary to the working of mineral claims, and as section 2337, which provides for the patenting of mill sites, is embraced in the chapter of the Revised Statutes relating to mineral lands, they are therefore included in this circular.

62. To avail themselves of this provision of law parties holding the possessory right to a vein or lode, and to a piece of non-mineral land not contiguous thereto for mining or milling purposes, not exceeding the quantity allowed for such purpose by section 2337, or prior laws, under which the land was appropriated, the proprietors of such vein or lode may file in the proper land office their application for a patent, under oath, in manner already set forth herein, which application, together with the plat and field notes, may include, embrace, and describe, in addition to the vein or lode claim, such non-contiguous mill site, and after due proceedings as to notice, etc., a patent will be issued conveying the same as one claim. The owner of a patented lode may, by an independent application, secure a mill site if good faith is manifest in its use or occupation in connection with the lode and no adverse claim exists.

63. Where the original survey includes a lode claim and also a mill site the lode claim should be described in the plat and field notes as "Sur. No. 37, A," and the mill site as "Sur. No. 37, B," or whatever may be its appropriate numerical designation; the course and distance from a corner of the mill site to a corner of the lode claim to be invariably given in such plat and field notes, and a copy of the plat and notice of application for patent must be conspicuously posted upon the mill site as well as upon the vein or lode claim for the statutory period of sixty days. In making the entry no separate receipt or certificate need be issued for the mill site, but the whole area of both lode and mill site will be embraced in one entry, the price being five dollars for each acre and fractional part of an acre embraced by such lode and mill-site claim.

64. In case the owner of a quartz mill or reduction works is not the owner or claimant of a vein or lode claim the law permits him to make application therefor in the same manner prescribed herein for mining claims, and after due

notice and proceedings, in the absence of a valid adverse filing, to enter and receive a patent for his mill site at said price per acre.

65. In every case there must be satisfactory proof that the land claimed as a mill site is not mineral in character, which proof may, where the matter is unquestioned, consist of the sworn statement of two or more persons capable, from acquaintance with the land, to testify understandingly.

What Conditions of Sale may be Made by Local Legislature

26 July, 1866, c. 262, s. 5, v. 14, p. 252

SEC. 2338. As a condition of sale, in the absence of necessary legislation by Congress, the local legislature of any State or Territory may provide rules for working mines, involving easements, drainage, and other necessary means to their complete development; and those conditions shall be fully expressed in the patent.

Vested Rights to Use of Water for Mining, etc., Right of Way for Canals

26 July 1866, c. 262, s. 9, v. 14, p. 253

SEC. 2339. Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for the purposes herein specified is acknowledged and confirmed; but whenever any person, in the construction of any ditch or canal, injures or damages the possession of any settler on the public domain, the party committing such injury or damage shall be liable to the party injured for such injury or damage.

Patents, Preemptions, and Homesteads Subject to Vested and Accrued Water Rights

9 July, 1870, c. 235, s. 17, v. 16, p. 218

SEC. 2340. All patents granted, or pre-emption or homesteads allowed, shall be subject to any vested and accrued water rights, or rights to ditches and reservoirs used in connection with such water rights, as may have been acquired under or recognized by the preceding section.

Act of Congress approved March 3, 1891 (26 Stat. L., 1095), provides as follows:

Restriction of All Rights of Entry to 320 Acres Repealed

SEC. 17. That reservoir sites located or selected and to be located and selected under the provisions of "An act making appropriations for sundry civil expenses of the Government for the fiscal year ending June thirtieth, eighteen hundred and eighty-nine, and for other purposes," and amendments thereto, shall be restricted to and shall contain only so much land as is actually necessary for the construction and maintenance of reservoirs, excluding so far as practicable lands occupied by actual settlers at the date of the location of said reservoirs and that the provisions of "An act making appropriations for sundry civil expenses of the Government for the fiscal year ending June thirtieth, eighteen hundred and ninety-one, and for other purposes," which reads as follows, viz: "no person who shall after the passage of this act enter upon any of the public lands with a view to occupation, entry, or settlement

under any of the land laws shall be permitted to acquire title to more than three hundred and twenty acres in the aggregate under all said laws," shall be construed to include in the maximum amount of lands the title to which is permitted to be acquired by one person only agricultural lands and not include lands entered or sought to be entered under mineral land laws.

. . . . . .

Reservation in Patents for Right of Way for Ditches and Canals Constructed

Right of entry under all the land laws restricted to 320 acres. Repealed, see act Mar. 3, 1891, sec. 17.

Act of Congress approved Aug. 30, 1890 (26 Stat. L., 371)

No person who shall, after the passage of this act, enter upon any of the public lands with a view to occupation, entry, or settlement under any of the land laws shall be permitted to acquire title to more than three hundred and twenty acres in the aggregate, under all of said laws, but this limitation shall not operate to curtail the right of any person who has heretofore made entry or settlement on the public lands, or whose occupation, entry or settlement, is validated by this act: *Provided*, That in all patents for lands hereafter taken up under any of the land laws of the United States or on entries or claims validated by this act west of the one hundredth meridian it shall be expressed that there is reserved from the lands in said patent described a right of way thereon for ditches or canals constructed by the authority of the United States.

Mineral Lands in which no Valuable Mines are Discovered Open to Homesteads

26 July, 1866, c. 262, s. 10, v. 14, p. 253

SEC. 2341. Wherever, upon the lands heretofore designated as mineral lands, which have been excluded from survey and sale, there have been homesteads made by citizens of the United States, or persons who have declared their intention to become citizens, which homesteads have been made, improved, and used for agricultural purposes, and upon which there have been no valuable mines of gold, silver, cinnabar, or copper discovered, and which are properly agricultural lands, the settlers or owners of such homesteads shall have a right of pre-emption thereto, and shall be entitled to purchase the same at the price of one dollar and twenty-five cents per acre, and in quantity not to exceed one hundred and sixty acres; or they may avail themselves of the provisions of chapter five of this Title, relating to "Homesteads."

Mineral Lands—How Set Apart as Agricultural Lands

26 July, 1866, c. 262, s. 11, v. 14, p. 253

SEC. 2342. Upon the survey of the lands described in the preceding section, the Secretary of the Interior may designate and set apart such portions of the same as are clearly agricultural lands, which lands shall thereafter be subject to pre-emption and sale as other public lands, and be subject to all the laws and regulations applicable to the same.

Additional Land Districts and Officers, Power of the President to Provide

26 July, 1866, c. 262, s. 7, v. 14, p. 252

SEC. 2343. The President is authorized to establish additional land-districts, and to appoint the necessary officers under existing laws, wherever

he may deem the same necessary for the public convenience in executing the provisions of this chapter.

Provisions of this Chapter Not to Affect Certain Rights

10 May, 1872, c. 152, s. 16, v. 17, p. 96
9 July, 1870, c. 235, s. 17, v. 16, p. 218

SEC. 2344. Nothing contained in this chapter shall be construed to impair, in any way, rights or interests in mining property acquired under existing laws; nor to affect the provisions of the act entitled "An act granting to A. Sutro the right of way and other privileges to aid in the construction of a draining and exploring tunnel to the Comstock lode, in the State of Nevada," approved July twenty-five, eighteen hundred and sixty-six.

Mineral Lands in Certain States Excepted

18 Feb., 1873, c. 159, v. 17, p. 465

SEC. 2345. The provisions of the preceding sections of this chapter shall not apply to the mineral lands situated in the States of Michigan, Wisconsin, and Minnesota, which are declared free and open to exploration and purchase according to legal subdivisions, in like manner as before the tenth day of May, eighteen hundred and seventy-two. And any bona fide entries of such lands within the States named since the tenth day of May, eighteen hundred and seventy-two, may be patented without reference to any of the foregoing provisions of this chapter. Such lands shall be offered for public sale in the same manner, at the same minimum price, and under the same rights of preemption as other public lands.

Grant of Lands to States or Corporations Not to Include Mineral Lands

30 Jan., 1865, Res. No. 10, v. 13, p. 567

SEC. 2346. No act passed at the first session of the Thirty-eighth Congress, granting lands to States or corporations to aid in the construction of roads or for other purposes, or to extend the time of grants made prior to the thirtieth day of January, eighteen hundred and sixty-five, shall be so construed as to embrace mineral lands, which in all cases are reserved exclusively to the United States, unless otherwise specially provided in the act or acts making the grant.

Entry of Lands Chiefly Valuable for Building Stone under the Placer-Mining Laws

Act of Congress approved August 4, 1892 (27 Stat. L., 348)

That any person authorized to enter lands under the mining laws of the United States may enter lands that are chiefly valuable for building stone under the provisions of the law in relation to placer-mineral claims: *Provided*, That lands reserved for the benefit of the public schools or donated to any State shall not be subject to entry under this act.

Entry and Patenting of Lands Containing Petroleum and other Mineral Oils under the Placer Mining Laws

Act of Congress approved February 11, 1897 (29 Stat. L., 526)

That any person authorized to enter lands under the mining laws of the United States may enter and obtain patent to lands containing petroleum or other mineral oils, and chiefly valuable therefor, under the provisions of the

laws relating to placer mineral claims: *Provided*, That lands containing such petroleum or other mineral oils which have heretofore been filed upon, claimed, or improved as mineral, but not yet patented, may be held and patented under the provisions of this act the same as if such filing, claim, or improvement were subsequent to the date of the passage hereof.

Assessment Required for Oil Mining Claims

Act of Congress approved Feb. 12, 1903 (32 Stat. L., 825)

That where oil lands are located, under the provisions of title thirty-two, chapter six, Revised Statutes of the United States, as placer mining claims, the annual assessment labor upon such claims may be done upon any one of a group of claims lying contiguous and owned by the same person or corporation, not exceeding five claims in all: *Provided*, That said labor will tend to the development or to determine the oil-bearing character of such contiguous claims.

Mining Laws Extended to Saline Lands

Act of Congress approved Jan. 31, 1901 (31 Stat., 145)

That all unoccupied public lands of the United States containing salt springs, or deposits of salt in any form, and chiefly valuable therefor, are hereby declared to be subject to location and purchase under the provisions of the law relating to placer-mining claims: *Provided*, That the same person shall not locate or enter more than one claim hereunder.

Land Office Regulations under Saline Act

31. Under the act approved January 31, 1901, extending the mining laws to saline lands, the provisions of the law relating to placer-mining claims are extended to all States and Territories and the district of Alaska, so as to permit the location and purchase thereunder of all unoccupied public lands containing salt springs, or deposits of salt in any form, and chiefly valuable therefor, with the proviso, "That the same person shall not locate or enter more than one claim hereunder."

32. Rights obtained by location under the placer-mining laws are assignable, and the assignee may make the entry in his own name; so, under this act, a person holding as assignee may make entry in his own name: *Provided*, He has not held under this act, at any time, either as locator or entryman, any other lands; his right is exhausted by having held under this act any particular tract, either as locator or entryman, either as an individual or as a member of an association. It follows, therefore, that no application for patent or entry, made under this act, shall embrace more than one single location.

33. In order that the conditions imposed by the proviso, as set forth in the above paragraph, may duly appear, the notice of location presented for record and the application for patent must each contain a specific statement under oath by each person whose name appears therein that he never has, either as an individual or as a member of an association, located or entered any other lands under the provisions of this act. Assignments made by persons who are not severally qualified as herein stated will not be recognized.

Town Sites on Mineral Lands Authorized — Lands Entered under the Mineral Laws Not Included in Restriction to 320 Acres

Act of Congress approved March 3, 1891 (26 Stat. L., 1095)

Sec. 16. That town-site entries may be made by incorporated towns

and cities on the mineral lands of the United States, but no title shall be acquired by such towns or cities to any vein of gold, silver, cinnabar, copper, or lead, or to any valid mining claim or possession held under existing law. When mineral veins are possessed within the limits of an incorporated town or city, and such possession is recognized by local authority or by the laws of the United States, the title to town lots shall be subject to such recognized possession and the necessary use thereof, and when entry has been made or patent issued for such town sites to such incorporated town or city, the possessor of such mineral vein may enter and receive patent for such mineral vein and the surface ground appertaining thereto: *Provided*, That no entry shall be made by such mineral-vein claimant for surface ground where the owner or occupier of the surface ground shall have had possession of the same before the inception of the title of the mineral-vein applicant.

Citizens of Colorado, Nevada, and the Territories Authorized to Fell and Remove Timber on the Public Domain for Mining and Domestic Purposes

Act of Congress approved June 3, 1878 (20 Stat. L., 88)

That all citizens of the United States and other persons, bona-fide residents of the State of Colorado, or Nevada, or either of the Territories of New Mexico, Arizona, Utah, Wyoming, Dakota, Idaho, or Montana, and all other mineral districts of the United States, shall be, and are hereby, authorized and permitted to fell and remove, for building, agricultural, mining, or other domestic purposes, any timber or other trees growing or being on the public lands, said lands being mineral, and not subject to entry under existing laws of the United States, except for mineral entry, in either of said States, Territories, or districts of which such citizens or persons may be at the time bona-fide residents, subject to such rules and regulations as the Secretary of the Interior may prescribe for the protection of the timber and of the undergrowth growing upon such lands, and for other purposes: *Provided*, The provisions of this act shall not extend to railroad corporations.

SEC. 2. That it shall be the duty of the register and the receiver of any local land office in whose district any mineral land may be situated to ascertain from time to time whether any timber is being cut or used upon any such lands, except for the purposes authorized by this act, within their respective land districts; and, if so, they shall immediately notify the Commissioner of the General Land Office of that fact; and all necessary expenses incurred in making such proper examinations shall be paid and allowed such register and receiver in making up their next quarterly accounts.

SEC. 3. Any person or persons who shall violate the provisions of this act, or any rules and regulations in pursuance thereof made by the Secretary of the Interior, shall be deemed guilty of a misdemeanor, and, upon conviction, shall be fined in any sum not exceeding five hundred dollars, and to which may be added imprisonment for any term not exceeding six months.

AN ACT MAKING APPROPRIATIONS FOR SUNDRY CIVIL EXPENSES OF THE GOVERNMENT FOR THE FISCAL YEAR ENDING JUNE THIRTIETH, EIGHTEEN HUNDRED AND NINETY-EIGHT, AND FOR OTHER PURPOSES. (30 STAT., 34, 35, 36), Vol. 26, p. 1095. Act of Congress approved June 4, 1897

Forest Reservations

All public lands heretofore designated and reserved by the President of the United States under the provisions of the act approved March third, eighteen hundred and ninety-one, the orders for which shall be and remain in full force and effect, unsuspended and unrevoked, and all public lands that may hereafter be set aside and reserved as public forest reserves under said act, shall be as far as practicable controlled and administered in accordance with the following provisions:

Forest Reservations — When to be Established

No public forest reservation shall be established, except to improve and protect the forest within the reservation, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States; but it is not the purpose or intent of these provisions, or of the act providing for such reservations, to authorize the inclusion therein of lands more valuable for the mineral therein, or for agricultural purposes, than for forest purposes.

. . . . . .

Use of Timber, etc., by Settlers, etc.

The Secretary of the Interior may permit, under regulations to be prescribed by him, the use of timber and stone found upon such reservations, free of charge, by bona fide settlers, miners, residents, and prospectors for minerals, for firewood, fencing, buildings, mining, prospecting, and other domestic purposes, as may be needed by such persons for such purposes; such timber to be used within the State or Territory, respectively, where such reservations may be located.

Egress and Ingress of Settlers within Reservations, etc.

Nothing herein shall be construed as prohibiting the egress or ingress of actual settlers residing within the boundaries of such reservations, or from crossing the same to and from their property or homes; and such wagon roads and other improvements may be constructed thereon as may be necessary to reach their homes and to utilize their property under such rules and regulations as may be prescribed by the Secretary of the Interior. Nor shall anything herein prohibit any person from entering upon such forest reservations for all proper and lawful purposes, including that of prospecting, locating, and developing the mineral resources thereof: *Provided*, That such persons comply with the rules and regulations covering such forest reservations.

. . . . . .

Restoration of Mineral or Agricultural Lands to the Public Domain

Upon the recommendation of the Secretary of the Interior, with the approval of the President, after sixty days' notice thereof, published in two papers of general circulation in the State or Territory wherein any forest reservation is situated, and near the said reservation, any public lands embraced within the limits of any forest reservation which, after due examination by personal inspection of a competent person appointed for that purpose by the Secretary of the Interior, shall be found better adapted for mining or for agricultural purposes than for forest usage, may be restored to the

public domain. And any mineral lands in any forest reservation which have been or which may be shown to be such, and subject to entry under the existing mining laws of the United States and the rules and regulations applying thereto, shall continue to be subject to such location and entry, notwithstanding any provisions herein contained.

Mineral Lands within Forest Reserves

LAND OFFICE REGULATIONS

114. The Act of June 4, 1897, provides that "any mineral lands in any forest reservation which have been or which may be shown to be such, and subject to entry under the existing mining laws of the United States and the rules and regulations applying thereto, shall continue to be subject to such location and entry," notwithstanding the reservation. This makes mineral lands in the forest reserves subject to location and entry under the general mining laws in the usual manner.

The act also provides that, "The Secretary of the Interior may permit, under regulations to be prescribed by him, the use of timber and stone found upon such reservations, free of charge, by *bona-fide* settlers, miners, residents, and prospectors for minerals, for firewood, fencing, buildings, mining, prospecting, and other domestic purposes, as may be needed by such persons for such purposes; such timber to be used within the State or Territory, respectively, where such reservations may be located."

For further instructions under this act see circular of Apr. 4, 1900 (30 L. D. 23, 28–30).

Mining Laws Extended to the District of Alaska

Act of Congress approved May 17, 1884 (23 Stat. L., 24)

Sec. 8. That the said district of Alaska is hereby created a land district, and a United States land office for said district is hereby located at Sitka. The commissioner provided for by this act to reside at Sitka shall be ex officio register of said land office, and the clerk provided for by this act shall be ex officio receiver of public moneys, and the marshal provided for by this act shall be ex officio surveyor-general of said district, and the laws of the United States relating to mining claims, and the rights incident thereto, shall, from and after the passage of this act, be in full force and effect in said district, under the administration thereof herein provided for, subject to such regulations as may be made by the Secretary of the Interior, approved by the President: *Provided*, That the Indians or other persons in said district shall not be disturbed in the possession of any lands actually in their use or occupation or now claimed by them, but the terms under which such persons may acquire title to such lands is reserved for future legislation by Congress: *And provided further*, That parties who have located mines or mineral privileges therein under the laws of the United States applicable to the public domain, or who have occupied and improved or exercised acts of ownership over such claims, shall not be disturbed therein, but shall be allowed to perfect their title to such claims by payment as aforesaid: *And provided also*, That the land not exceeding six hundred and forty acres at any station now occupied as missionary stations among the Indian tribes in said section, with

the improvements thereon erected by or for such societies, shall be continued in the occupancy of the several religious societies to which said missionary stations respectively belong until action by Congress. But nothing contained in this act shall be construed to put in force in said district the general land laws of the United States.

. . . . . .

Mining Rights in Alaska to Native-born Citizens of the Dominion of Canada

Act of Congress approved May 14, 1898 (30 Stat. L.)

SEC. 13. That native-born citizens of the Dominion of Canada shall be accorded in said district of Alaska the same mining rights and privileges accorded to citizens of the United States in British Columbia and the Northwest Territory by the laws of the Dominion of Canada or the local laws, rules, and regulations; but no greater rights shall be thus accorded than citizens of the United States, or persons who have declared their intention to become such, may enjoy in said district of Alaska; and the Secretary of the Interior shall from time to time promulgate and enforce rules and regulations to carry this provision into effect.

LAND OFFICE REGULATIONS — DISTRICT OF ALASKA

112. Section 13, act of May 14, 1898, according to native-born citizens of Canada "the same mining rights and privileges" in the district of Alaska as are accorded to citizens of the United States in British Columbia and the Northwest Territory by the laws of the Dominion of Canada, is not now and never has been operative, for the reason that the only mining rights and privileges granted to any person by the laws of the Dominion of Canada are those of leasing mineral lands upon the payment of a stated royalty, and the mining laws of the United States make no provision for such leases.

AN ACT MAKING FURTHER PROVISIONS FOR A CIVIL GOVERNMENT FOR ALASKA, AND FOR OTHER PURPOSES

[Sections 13 and 14 of this Act, also paragraphs 2 to 8 inclusive and the final proviso of sec. 15 and the part of sec. 16 before the word '*Provided*' have been omitted in the revision of May 21, 1907 of the Rules and Regulations of the Land Office, the provisions thereof having been superseded by the Act of March 2, 1907, given on p. 395, but being so recently superseded they are retained here as they may be useful in connection with claims located prior to March 2, 1907.]

District Divided into Three Recording Divisions

Act of Congress approved June 6, 1900 (31 Stat., 321-326-330)

SEC. 13. The judges of the district, or a majority of them, shall, as soon as practicable after their appointment, meet, and by appropriate order, to be thereafter entered in each division of the court, divide the district into three recording divisions, designate the division of the court to supervise each, and also define the boundaries thereof by reference to natural objects and permanent landmarks or monuments, in such manner that the boundaries of each recording division can be readily determined and become generally known from such description, which order shall be given publicity in such manner, by posting, publication, or otherwise, as the judges or any

division of the court may direct, the necessary expense of the publication of such order and description of the recording divisions to be allowed and paid as other court expenses.

Recording Districts

At any regular or special term an order may be made by the court establishing one or more recording districts within the recording division under the supervision of such division of the court and defining the boundaries thereof by reference to natural objects and permanent landmarks or monuments, in such manner that the boundaries thereof can be readily determined.

Recorder

The order establishing a recording district shall designate a commissioner to be ex officio recorder thereof, and shall also designate the place where the commissioner shall keep his recording office within the recording district:

Proviso — Of what Clerk of the Court shall be Ex-Officio Recorder

Provided, The clerk of the court shall be ex officio recorder of all that portion of the recording division under the supervision of his division of the court not embraced within the limits of a recording district established, bounded, and described therein as authorized by this act, and when any part of the division for which a clerk has been recording shall be embraced in a recording district, such clerk shall transcribe that portion of his records appertaining to such district and deliver the same to the commissioner designated as recorder thereof.

Change of Districts, etc.

Whenever it appears to the satisfaction of the court that the public interests demand, or that the convenience of the people require, the court may change or modify the boundaries or discontinue a recording district or change the location of a recording office, or remove the commissioner acting as ex officio recorder, and appoint another commissioner to fill the office.

Record Books, etc.

SEC. 14. The clerk as ex officio recorder must procure such books for records as the business of his office requires and such as may be required by the respective commissioners designated as recorders in his division of the court, but orders for the same must first be obtained from the court or the judge thereof. The respective officers acting as ex officio recorders shall have the custody and must keep all the books, records, maps, and papers deposited in their respective offices, and where a recorder is removed or from any cause becomes unable to act, or a recording district is discontinued, the records and all books, papers, and property relating thereto shall be delivered to the clerk or such officer or person as the court or judge thereof may direct.

The record books procured by the clerk, as herein provided, shall be paid for by him, on the order of the court, out of any moneys in his hands, as other court expenses are paid.

What Recorded

SEC. 15. The respective recorders shall, upon the payment of the fees

for the same prescribed by the Attorney-General, record separately, in large and well-bound separate books, in fair hands:

First. Deeds, grants, transfers, contracts, to sell or convey real estate and mortgages of real estate, releases of mortgages, powers of attorney, leases which have been acknowledged or proved, mortgages upon personal property;

Second. Certificates of marriage and marriage contracts and births and deaths;

Third. Wills devising real estate admitted to probate;

Fourth. Official bonds;

Fifth. Transcripts of judgments which by law are made liens upon real estate;

Sixth. All orders and judgments made by the district court or the commissioners in probate matters affecting real estate which are required to be recorded;

Seventh. Notices and declaration of water rights;

Eighth. Assignments for the benefit of creditors;

Ninth. Affidavits of annual work done on mining claims;

Tenth. Notices of mining location and declaratory statements;

Eleventh. Such other writings as are required or permitted by law to be recorded, including the liens of mechanics, laborers, and others.

Proviso. Mining Claims. — Where Instruments Recorded

Provided, Notices of location of mining claims shall be filed for record within ninety days from the date of the discovery of the claim described in the notice, and all instruments shall be recorded in the recording district in which the property or subject-matter affected by the instrument is situated, and where the property or subject-matter is not situated in any established recording district the instrument affecting the same shall be recorded in the office of the clerk of the division of the court having supervision over the recording division in which such property or subject-matter is situated.

Accounting for Fees for Unrecorded Instruments — Penalty. — Proviso. Miners Regulations for Recording, etc. — Recorder. — Records at Dyea, etc., Legalized

SEC. 16. Any clerk or commissioner authorized to record any instrument who having collected fees for so doing fails to record such instrument shall account to his successor in office, or to such person as the court may direct, for all the fees received by him for recording any instrument on file and unrecorded at the expiration of his official term, or at the time he is required to transfer his records to another officer under the direction of the court. And any clerk or commissioner who fails, neglects, or refuses to so account for fees received and not actually earned by the recording of instrument shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined not less than one hundred dollars nor more than one thousand dollars, and imprisoned for not more than one year, or until the fees received and unearned as aforesaid shall have been properly accounted for and paid over by him, as hereinbefore provided. And in addition such fees may be recovered from such clerk or commissioner or the bondsmen of either, in a civil action which shall be brought by the district attorney, in the name of

the United States, to recover the same; and the amount when recovered shall be by the court transferred to the successor in office of such recorder, who shall thereupon proceed to record the unrecorded instruments: *Provided*, Miners in any organized mining district may make rules and regulations governing the recording of notices of location of mining claims, water rights, flumes and ditches, mill sites and affidavits of labor, not in conflict with this act or the general laws of the United States; and nothing in this act shall be construed so as to prevent the miners in any regularly organized mining district not within any recording district established by the court from electing their own mining recorder to act as such until a recorder therefor is appointed by the court: *Provided further*, All records heretofore regularly made by the United States commissioner at Dyea, Skagway, and the recorder at Douglas City, not in conflict with any records regularly made with the United States commissioner at Juneau, are hereby legalized. And all records heretofore made in good faith in any regularly organized mining district are hereby made public records, and the same shall be delivered to the recorder for the recording district including such mining district within six months from the passage of this act.

Mining Laws.—Provisos. Gold, etc. Explorations on Bering Sea.—Miner's Regulations—Not to Conflict with Federal Laws.—Exclusive Permits to Mine Void, etc.—Provision Reserving Roadway, etc., Not to Apply. Vol. 30, p. 413

SEC. 26. The laws of the United States relating to mining claims, mineral locations, and rights incident thereto are hereby extended to the district of Alaska: *Provided*, That subject only to such general limitations as may be necessary to exempt navigation from artificial obstructions all land and shoal water between low and mean high tide on the shores, bays, and inlets of Bering Sea, within the jurisdiction of the United States, shall be subject to exploration and mining for gold and other precious metals by citizens of the United States, or persons who have legally declared their intentions to become such, under such reasonable rules and regulations as the miners in organized mining districts may have heretofore made or may hereafter make governing the temporary possession thereof for exploration and mining purposes until otherwise provided by law: *Provided further*, That the rules and regulations established by the miners shall not be in conflict with the mining laws of the United States; and no exclusive permits shall be granted by the Secretary of War authorizing any person or persons, corporation or company to excavate or mine under any of said waters below low tide, and if such exclusive permit has been granted it is hereby revoked and declared null and void; but citizens of the United States or persons who have legally declared their intention to become such shall have the right to dredge and mine for gold or other precious metals in said waters, below low tide, subject to such general rules and regulations as the Secretary of War may prescribe for the preservation of order and the protection of the interests of commerce; such rules and regulations shall not, however, deprive miners on the beach of the right hereby given to dump tailings into or pump from the sea opposite their claims, except where such dumping would actually obstruct navigation; and the reservation

of a roadway sixty feet wide, under the tenth section of the Act of May fourteenth, eighteen hundred and ninety-eight, entitled "An Act extending the homestead laws and providing for right of way for railroads in the district of Alaska, and for other purposes," shall not apply to mineral lands or town sites.

Alaska. — Annual Improvements, etc., Required on Mining Claims. Filing Affidavits. — Forfeiture. — Officer before whom Affidavits may be Made. — Time of filing.

Act of Congress approved March 2, 1907 (35 Stat., 1243)
R. S., secs. 5392, 5393, p. 1045.

That during each year and until patent has been issued therefor, at least one hundred dollars' worth of labor shall be performed or improvements made on, or for the benefit or development of, in accordance with existing law, each mining claim in the district of Alaska heretofore or hereafter located. And the locator or owner of such claim or some other person having knowledge of the facts may also make and file with the said recorder of the district in which the claims shall be situate an affidavit showing the performance of labor or making of improvements to the amount of one hundred dollars as aforesaid and specifying the character and extent of such work. Such affidavit shall set forth the following: First, the name or number of the mining claims and where situated; second, the number of days' work done and the character and value of the improvements placed thereon; third, the date of the performance of such labor and of making improvements; fourth, at whose instance the work was done or the improvements made; fifth, the actual amount paid for work and improvement, and by whom paid when the same was not done by the owner. Such affidavit shall be prima facie evidence of the performance of such work or making of such improvements, but if such affidavits be not filed within the time fixed by this act the burden of proof shall be upon the claimant to establish the performance of such annual work and improvements. And upon failure of the locator or owner of any such claim to comply with the provisions of this act, as to performance of work and improvements, such claim shall become forfeited and open to location by others as if no location of the same had ever been made. The affidavits required hereby may be made before any officer authorized to administer oaths, and the provisions of sections fifty-three hundred and ninety-two and fifty-three hundred and ninety-three of the Revised Statutes[1] are hereby extended to such affidavits. Said affidavits shall be filed not later than ninety days after the close of the year in which such work is performed.

Fee

SEC. 2. That the recorders for the several divisions or districts of Alaska shall collect the sum of one dollar and fifty cents as a fee for the filing, recording, and indexing said annual proofs of work and improvements for each claim so recorded.

[1] These sections, 5392 and 5393, provided for the punishment of perjury or subordination of perjury by fine not exceeding $2000 *and* imprisonment, at hard labor, not exceeding five years.

Acts Concerning Mineral Land in Certain Indian Reservations

There are acts passed at various times relating to the opening of Indian reservations which also expressly provide for the extending of mineral laws over the parts of such reservations thrown open to the public. As these are very limited in area of application and do not usually modify the operation of the U. S. general mining statutes and decisions thereon, they are not given in full, but the following list comprises all reservations mentioned in such acts with dates of approval and any special features relating to particular reservation:

Wichita lands, Oklahoma, Mar. 2, 1895.

Fort Belknap Indian Reservation, Montana, June 10, 1896, (minimum price per acre, $10.)

Blackfeet Indian Reservation, Montana, June 10, 1896.

San Carlos Indian Reservation, Arizona, June 10, 1896.

Comanche, Kiowa, and Apache lands, Oklahoma, June 6, 1900.

Uintah and White River tribes of Ute Indian Reservation, Utah, May 27, 1902. (Grants preferential rights to mineral lessee from Indians not to exceed 640 acres and to the Raven Mining Co. the right to locate 100 claims in lieu of lease.)

Uncompahgre Indian Reservation, Utah, Mar. 3, 1903. (Relates only to claims of gilsonite, asphaltum, elaterite, etc., located prior to Jan. 1, 1891, and reserving certain of such lands for future disposition by Congress.)

Flathead Indian Reservation, Montana, Apr. 23, 1904.

Crow Indian Reservation, Montana, Apr. 27, 1904. (Price of mineral land as provided by law but in no case less than $4 per acre.)

Yakima Indian Reservation, Washington, Dec. 21, 1904. (Price of land not classified as mineral, not to be less than appraised value of said land nor less than statutory price of mineral land.)

Shoshone or Wind River Indian Reservation, Wyoming, Mar. 3, 1905. (Entry and payment must be made within three years of location or all rights forfeited.)

"Diminished" Colville Indian Reservation, Washington, Mar. 22, 1906.

Cœur D'Alene Indian Reservation, Idaho, June 30, 1907. (No patents to issue for coal or oil lands.)

Land Office Regulations — Surveys of Mining Claims

GENERAL PROVISIONS

115. Under section 2334, U. S. Rev. Stats., the U. S. surveyor-general "may appoint in each land district containing mineral lands as many competent surveyors as shall apply for appointment to survey mining claims."

116. Persons desiring such appointments should therefore file their applications with the surveyor-general for the district wherein appointment is asked, who will furnish all information necessary.

117. All appointments of mineral surveyors must be submitted to the Commissioner of the General Land Office for approval.

118. The surveyors-general have authority to suspend or revoke the commissions of deputy mineral surveyors for cause. Before final action, how-

ever, the matter should be submitted to the Commissioner of the General Land Office for approval.

119. Such surveyors will be allowed the right of appeal from the action of the surveyor-general in the usual manner. Such appeal should be filed with the surveyor-general, who will at once transmit the same, with a full report, to the General Land Office.

120. Neither the surveyor-general nor the Commissioner of the General Land Office has jurisdiction to settle differences, relative to the payment of charges for field work, between mineral surveyors and claimants. These are matters of private contract and must be enforced in the ordinary manner, *i.e.*, in the local courts. The Department has, however, authority to investigate charges affecting the official actions of mineral surveyors, and will, on sufficient cause shown, suspend or revoke their appointment.

121. The surveyors general should appoint as many competent deputy-mineral surveyors as apply for appointment, in order that claimants may have a choice of surveyors, and be enabled to have their work done on the most advantageous terms.

122. The schedule of charges for office work should be as low as is possible. No additional charges should be made for orders for amended surveys, unless the necessity therefor is clearly the fault of the claimant, or considerable additional office work results therefrom.

123. In cases where the error in the original survey is due to the carelessness or neglect of the surveyor who made it, he should be required to make the necessary corrections in the field at his own expense, and the surveyor-general should advise him that the penalty for failure to comply with instructions within a specified time will be the suspension or revocation of his commission.

124. Mineral surveyors will address all official communications to the surveyor-general. They will, when a mining claim is the subject of correspondence, give the name and survey number. In replying to letters they will give the subject-matter and date of the letter. They will promptly notify the surveyor-general of any change in post-office address.

125. Mineral surveyors should keep a complete record of each survey made by them and the facts coming to their knowledge at the time, as well as copies of all their field notes, reports, and official correspondence, in order that such evidence may be readily produced when called for at any future time. Field notes and other reports must be written in a clear and legible hand or typewritten, in non-copying ink, and upon the proper blanks furnished gratuitously by the surveyor-general's office upon application therefor. No interlineations or erasures will be allowed.

126. No return by a mineral surveyor will be recognized as official unless it is over his signature as a United States deputy mineral surveyor, and made in pursuance of a special order from the surveyor-general's office. After he has received an order for survey he is required to make the survey and return correct field notes thereof to the surveyor-general's office without delay.

127. The claimant is required, in all cases, to make satisfactory arrangements with the surveyor for the payment for his services and those of his

assistants in making the survey, as the United States will not be held responsible for the same.

128. A mineral surveyor is precluded from acting, either directly or indirectly, as attorney in mineral claims. His duty in any particular case ceases when he has executed the survey and returned the field notes and preliminary plat, with his report, to the surveyor-general. He will not be allowed to prepare for the mining claimant the papers in support of his application for patent, or otherwise perform the duties of an attorney before the land office in connection with a mining claim. He is not permitted to combine the duties of surveyor and notary public in the same case by administering oaths to the parties in interest. It is preferable that both preliminary and final oaths of assistants should be taken before some officer duly authorized to administer oaths, other than the mineral surveyor. In cases, however, where great delay, expense, or inconvenience would result from a strict compliance with this rule, the mineral surveyor is authorized to administer the necessary oaths to his assistants, but in each case where this is done, he will submit to the proper surveyor-general a full written report of the circumstances which required his stated action; otherwise he must have nothing to do with the case, except in his official capacity as surveyor. He will make no survey of a mineral claim in which he holds an interest, nor will he employ chainmen interested therein in any manner.

Survey — How Made

129. The survey made and returned must, in every case, be an actual survey on the ground in full detail, made by the mineral surveyor in person after the receipt of the order, and without reference to any knowledge he may have previously acquired by reason of having made the location survey or otherwise, and must show the actual facts existing at the time. This precludes him from calculating the connections to corners of the public survey and location monuments, or any other lines of his survey through prior surveys made by others and substituting the same for connections or lines of the survey returned by him. The term *survey* in this paragraph applies not only to the usual field work, but also to the examinations required for the preparation of affidavits of five hundred dollars expenditure, descriptive reports on placer claims, and all other reports.

130. The survey of a mining claim may consist of several contiguous locations, but such survey must, in conformity with statutory requirements, distinguish the several locations, and exhibit the boundaries of each. The survey will be given but one number.

131. The survey must be made in strict conformity with, or be embraced within, the lines of the location upon which the order is based. If the survey and location are identical, that fact must be clearly and distinctly stated in the field notes. If not identical, a bearing and distance must be given from each established corner of survey to the corresponding corner of the location, and the location corner must be fully described, so that it can be identified. The lines of the location, as found upon the ground, must be laid down upon the preliminary plat in such a manner as to contrast and show their relation to the lines of survey.

132. In view of the principle that courses and distances must give way when in conflict with fixed objects and monuments, the surveyor will not, under any cicumstances, change the corners of the location for the purpose of making them conform to the description in the record. If the difference from the location be slight, it may be explained in the field notes.

133. No mining claim located subsequent to May 10, 1872, should exceed the statutory limit in width on each side of the center of vein or 1,500 feet in length, and all surveys must close within 50–100 feet in 1,000 feet, and the error must not be such as to make the location exceed the statutory limit, and in absence of other proof the discovery point is held to be the center of the vein on the surface. The course and length of the vein should be marked upon the plat.

134. All mineral surveys must be made with a transit, provided with a solar attachment, by which the meridian can be determined independently of the magnetic needle, and all courses must be referred to the true meridian. The variation should be noted at each corner of the survey. The true course of at least one line of each survey must be ascertained by astronomical observations made at the time of the survey; the data for determining the same and details as to how these data were arrived at must be given. Or, in lieu of the foregoing the survey must be connected with some line, the true course of which has been previously established beyond question, and in a similar manner, and, when such lines exist, it is desirable in all cases that they should be used as a proof of the accuracy of subsequent work.

135. Corner No. 1 of each location embraced in a survey must be connected by course and distance with nearest corner of the public survey or with a United States location monument, if the claim lies within two miles of such corner or monument. If both are within the required distance the connection must be with the corner of the public survey.

136. Surveys and connections of mineral claims may be made in suspended townships in the same manner as though the claims were upon unsurveyed land, except as hereinafter specified, by connecting them with independent mineral monuments. At the same time, the position of any public-land corner which may be found in the neighborhood of the claim should be noted, so that, in case of the release of the township from suspension, the position of the claim can be shown on the plat.

137. A mineral survey must not be returned with its connection made only with a corner of the public survey, where the survey of the township within which it is situated is under suspension, nor connected with a mineral monument alone, when situated within the limits of a township the regularity and correctness of the survey of which is unquestioned.

138. In making an official survey, corner No. 1 of each location must be established at the corner nearest the corner of the public survey or location monument, unless good cause is shown for its being placed otherwise. If connections are given to both a corner of the public survey and location monument, corners Nos. 1 should be placed at the corner nearest the corner of the public survey. When a boundary line of a claim intersects a section line, courses and distances from point of intersection to the Government corners at each end of the half mile of section line so intersected must be given.

139. In case a survey is situated in a district where there are no corners of the public survey and no monuments within the prescribed limits, a mineral monument must be established, in the location of which the greatest care must be exercised to insure permanency as to site and construction.

140. The site, when practicable, should be some prominent point, visible for a long distance from every direction, and should be so chosen that the permanency of the monument will not be endangered by snow, rock, or landslides, or other natural causes.

141. The monument should consist of a stone not less than 30 inches long, 20 inches wide, and 6 inches thick, set half-way in the ground, with a conical mound of stone 4 feet high and 6 feet base alongside. The letters U. S. L. M., followed by the consecutive number of the monument in the district, must be plainly chiseled upon the stone. If impracticable to obtain a stone of required dimensions, then a post 8 feet long, 6 inches square, set 3 feet in the ground, scribed as for a stone monument, protected by a well-built conical mound of stone of not less than 3 feet high and 6 feet base around it, may be used. The exact point for connection must be indicated on the monument by an X chiseled thereon; if a post is used, then a tack must be driven into the post to indicate the point.

142. From the monument, connections by course and distance must be taken to two or three bearing trees or rocks, and to any well-known and permanent objects in the vicinity, such as the confluence of streams, prominent rocks, buildings, shafts, or mouths of adits. Bearing trees must be properly scribed B. T. and bearing rocks chiseled B. R., together with the number of the location monument; the exact point on the tree or stone to which the connection is taken should be indicated by a cross or other unmistakable mark. Bearings should also be taken to prominent mountain peaks, and the approximate distance and direction ascertained from the nearest town or mining camp. A detailed description of the locating monument, with a topographical map of its location, should be furnished the office of the surveyor-general by the surveyor.

143. Corners may consist of —

First. A stone at least 24 inches long set 12 inches in the ground, with a conical mound of stone 1½ feet high, 2 feet base, alongside.

Second. A post at least 3 feet long by 4 inches square, set 18 inches in the ground and surrounded by a substantial mound of stone or earth.

Third. A rock in place.

A stone should always be used for a corner when possible, and when so used the kind should be stated.

144. All corners must be established in a permanent and workmanlike manner, and the corner and survey number must be neatly chiseled or scribed on the sides facing the claim. The *exact* corner point must be permanently indicated on the corner. When a rock in place is used its dimensions above ground must be stated and a cross chiseled at the exact corner point.

145. In case the point for the corner be inaccessible or unsuitable a witness corner, which must be marked with the letters W. C. in addition to the corner and survey number, should be established. The witness corner should be located upon a line of the survey and as near as possible to the true corner,

with which it must be connected by course and distance. The reason why it is impossible or impracticable to establish the true corner must always be stated in the field notes, and in running the next course it should be stated whether the start is made from the true place for corner or from witness corner.

146. The identity of all corners should be perpetuated by taking courses and distances to bearing trees, rocks, and other objects, as prescribed in the establishment of location monuments, and when no bearings are given it should be stated that no bearings are available. Permanent objects should be selected for bearings whenever possible.

147. If an official mineral survey has been made in the vicinity, within a reasonable distance, a further connecting line should be run to some corner thereof; and in like manner all conflicting surveys and locations should be so connected, and the corner with which connection is made in each case described. Such connections will be made and conflicts shown according to the boundaries of the neighboring or conflicting claims as each is marked, defined, and actually established upon the ground. The mineral surveyor will fully and specifically state in his return *how* and by what *visible evidences* he was able to identify on the ground the several conflicting surveys and those which appear according to their returned tie or boundary lines to conflict, if they were so identified, and report errors or discrepancies found by him in any such surveys. In the survey of contiguous claims which constitute a consolidated group, where corners are common, bearings should be mentioned but once.

148. The mineral surveyor should note carefully all topographical features of the claim, taking distances on his lines to intersections with all streams, gulches, ditches, ravines, mountain ridges, roads, trails, etc., with their widths, courses, and other data that may be required to map them correctly. All municipal or private improvements, such as blocks, streets, and buildings, should be located.

149. If, in running the exterior lines of a claim, the survey is found to conflict with the survey of another claim, the distances to the points of intersection, and the courses and distances along the line intersected from an established corner of such conflicting claim to such points of intersection, should be described in the field notes: *Provided*, That where a corner of the conflicting survey falls within the claim being surveyed, such corner should be selected from which to give the bearing, otherwise the corner nearest the intersection should be taken. The same rule should govern in the survey of claims embracing two or more locations the lines of which intersect.

150. A lode and mill-site claim in one survey will be distinguished by the letters A and B following the number of the survey. The corners of the mill site will be numbered independently of those of the lode. Corner No. 1 of the mill site must be connected with a corner of the lode claim as well as with a corner of the public survey or United States location monument.

151. When a placer claim includes lodes, or when several contiguous placer or lode locations are included as one claim in one survey, there must be given to the corners of each location constituting the same a separate consecutive numerical designation, begining with corner No. 1 in each case.

152. Throughout the description of the survey, after each reference to the lines or corner of a location, the name thereof must be given, and if unsurveyed, the fact stated. If reference is made to a location included in a prior official survey, the survey number must be given, followed by the name of the location. Corners should be described once only.

153. The total area of each location and also the area in conflict with each intersecting survey or claim should be stated; also the total area claimed. But when locations embraced in one survey conflict with each other such conflicts should only be stated in connection with the location from which the conflicting area is excluded.

154. It should be stated particularly whether the claim is upon surveyed or unsurveyed public lands, giving in the former case the quarter section, township, and range in which it is located, and the section lines should be indicated by full lines and the quarter-section lines by dotted lines.

155. The title-page of the field notes must contain the post-office address of the claimant or his authorized agent.

156. In the mineral surveyor's report of the value of the improvements all *actual* expenditures and *mining* improvements made by the claimant or his grantors, having a direct relation to the development of the claim, must be included in the estimate.

157. The expenditures required may be made from the surface or in running a tunnel, drifts, or crosscuts for the development of the claim. Improvements of any other character, such as buildings, machinery, or roadways, must be excluded from the estimate, unless it is shown clearly that they are associated with actual excavations, such as cuts, tunnels, shafts, etc., are essential to the practical development of, and actually facilitate the extraction of mineral from, the claim.

158. All mining and other improvements claimed will be located by courses and distances from corners of the survey, or from points on the center or side lines, specifying with particularity and detail the dimensions and character of each, and the improvements upon each location should be numbered consecutively, the point of discovery being always No. 1. Improvements made by a former locator who has abandoned his claim, cannot be included in the estimate, but should be described and located in the notes and plat.

159. In case of a lode and mill-site claim in the same survey the expenditure of five hundred dollars must be shown upon the lode claim.

160. If the value of the labor and improvements upon a mineral claim is less than five hundred dollars at the time of survey, the mineral surveyor may file with the surveyor-general supplemental proof showing five hundred dollars expenditure made prior to the expiration of the period of publication.

161. The mineral surveyor will return with his field notes a preliminary plat on blank sent to him for that purpose, protracted on a scale of two hundred feet to an inch, if practicable. In preparing plats the top is north. Copy of the calculations of areas by double meridian distances and of all triangulations or traverse lines must be furnished. The lines of the claim surveyed should be heavier than the lines of conflicting claims.

162. Whenever a survey has been reported in error the surveyor who

made it will be required to promptly make a thorough examination upon the premises and report the result, under oath, to the surveyor-general's office. In case he finds his survey in error he will report in detail all discrepancies with the original survey and submit any explanation he may have to offer as to the cause. If, on the contrary, he should report his survey correct, a joint survey will be ordered to settle the differences with the surveyor who reported the error. A joint survey must be made within ten days after the date of order unless satisfactory reasons are submitted, under oath, for a postponement. The field work must in every sense of the term be a *joint* and not a separate survey, and the observations and measurements taken with the same instrument and chain, previously tested and agreed upon.

163. The surveyor found in error, or, if both are in error, the one who reported the same, will make out the field notes of the joint survey, which, after being duly signed and sworn to by both parties, must be transmitted to the surveyor-general's office.

164. Inasmuch as amended surveys are ordered only by special instructions from the General Land Office, and the conditions and circumstances peculiar to each separate case, and the object sought by the required amendment, alone govern all special matters relative to the manner of making such survey and the form and subject-matter to be embraced in the field notes thereof, but few general rules applicable to all cases can be laid down.

165. The amended survey must be made in strict conformity with, or be embraced within, the lines of the original survey. If the amended and original surveys are identical, that fact must be clearly and distinctly stated in the field notes. If not identical, a bearing and distance must be given from each established corner of the amended survey to the corresponding corner of the original survey. The lines of the original survey, as found upon the ground, must be laid down upon the preliminary plat in such manner as to contrast and show their relation to the lines of the amended survey.

166. The field notes of the amended survey must be prepared on the same size and form of blanks as are the field notes of the original survey, and the word "amended" must be used before the word "survey" wherever it occurs in the field notes.

167. Mineral surveyors are required to make full examinations of all placer claims at the time of survey, and file with the field notes a descriptive report, in which will be described —

(*a*) The quality and composition of the soil, and the kind and amount of timber and other vegetation.

(*b*) The *locus* and size of streams, and such other matter as may appear upon the surface of the claims.

(*c*) The character and extent of all surface and underground workings, whether placer or lode, for mining purposes, locating and describing them.

(*d*) The proximity of centers of trade or residence.

(*e*) The proximity of well-known systems of lode deposits or of individual lodes.

(*f*) The use or adaptability of the claim for placer mining, and whether water has been brought upon it in sufficient quantity to mine the same, or whether it can be procured for that purpose.

(*g*) What works or expenditures have been made by the claimant or his grantors for the development of the claim, and their situation and location with respect to the same as applied for.

(*h*) The true situation of all mines, salt licks, salt springs, and mill sites which come to the surveyor's knowledge, or a report by him that none exist on the claim, as the facts may warrant.

(*i*) Said report must be made under oath and duly corroborated by one or more disinterested persons.

168. The employing of claimants, their attorneys, or parties in interest, as assistants in making surveys of mineral claims, will not be allowed.

169. The field work must be accurately and properly performed and returns made in conformity with the foregoing instructions. Errors in the survey must be corrected at the surveyor's own expense, and if the time required in the examination of the returns is increased by reason of neglect or carelessness, he will be required to make an additional deposit for office work. He will be held to a strict accountability for the faithful discharge of his duties, and will be required to observe fully the requirements and regulations in force as to making mineral surveys. If found incompetent as a surveyor, careless in the discharge of his duties, or guilty of a violation of said regulations, his appointment will be promptly revoked.

Coal-land Law and Regulations Thereunder

Entry of Coal Lands

3 March, 1873, c. 279, s. 1, v. 17, p. 607

Sec. 2347. Every person above the age of twenty-one years, who is a citizen of the United States, or who has declared his intention to become such, or any association of persons severally qualified as above, shall, upon application to the register of the proper land office, have the right to enter, by legal subdivisions, any quantity of vacant coal lands of the United States not otherwise appropriated or reserved by competent authority, not exceeding one hundred and sixty acres to such individual person, or three hundred and twenty acres to such association, upon payment to the receiver of not less than ten dollars per acre for such lands, where the same shall be situated more than fifteen miles from any completed railroad, and not less than twenty dollars per acre for such lands as shall be within fifteen miles of such road.

Preemption of Coal Lands. Ibid., s. 2

Sec. 2348. Any person or association of persons severally qualified, as above provided, who have opened and improved, or shall hereafter open and improve, any coal mine or mines upon the public lands, and shall be in actual possession of the same, shall be entitled to a preference right of entry, under the preceding section, of the mines so opened and improved: *Provided*, That when any association of not less than four persons, severally qualified as above provided, shall have expended not loss than five thousand dollars in working and improving any such mine or mines, such association may enter not exceeding six hundred and forty acres, including such mining improvements.

Preemption Claims of Coal Land to be presented within Sixty Days, etc. Ibid., s. 3

SEC. 2349. All claims under the preceding section must be presented to the register of the proper land district within sixty days after the date of actual possession and the commencement of improvements on the land, by the filing of a declaratory statement therefor; but when the township plat is not on file at the date of such improvement, filing must be made within sixty days from the receipt of such plat at the district office; and where the improvements shall have been made prior to the expiration of three months from the third day of March, eighteen hundred and seventy-three, sixty days from the expiration of such three months shall be allowed for the filing of a declaratory statement, and no sale under the provisions of this section shall be allowed until the expiration of six months from the third day of March, eighteen hundred and seventy-three.

Only One Entry Allowed. Ibid., s. 4.

SEC. 2350. The three preceding sections shall be held to authorize only one entry by the same person or association of persons; and no association of persons any member of which shall have taken the benefit of such sections, either as an individual or as a member of any other association, shall enter or hold any other lands under the provisions thereof; and no member of any association which shall have taken the benefit of such sections shall enter or hold any other lands under their provisions; and all persons claiming under section twenty-three hundred and forty-eight shall be required to prove their respective rights and pay for the lands filed upon within one year from the time prescribed for filing their respective claims; and upon failure to file the proper notice, or to pay for the land within the required period, the same shall be subject to entry by any other qualified applicant.

Conflicting Claim. Ibid., s. 5.

SEC. 2351. In case of conflicting claims upon coal lands where the improvements shall be commenced, after the third day of March, eighteen hundred and seventy-three, priority of possession and improvement, followed by proper filing and continued good faith, shall determine the preference-right to purchase. And also where improvements have already been made prior to the third day of March, eighteen hundred and seventy-three, division of the land claimed may be made by legal subdivisions, to include, as near as may be, the valuable improvements of the respective parties. The Commissioner of the General Land Office is authorized to issue all needful rules and regulations for carrying into effect the provisions of this and the four preceding sections.

Rights Reserved. Ibid., s. 6.

SEC. 2352. Nothing in the five preceding sections shall be construed to destroy or impair any rights which may have attached prior to the third day of March, eighteen hundred and seventy-three, or to authorize the sale of lands valuable for mines of gold, silver or copper.

LAND OFFICE REGULATIONS

[The following rules and regulations in regard to coal lands in the Public land States and Territories and the district of Alaska were issued

April 12, 1907, abrogating all previous rules and regulations relating to coal lands.]

1. The sale of coal lands is provided for —

(*a*) By ordinary *cash entry* under section 2347;

(*b*) By *cash entry* under a *preference* right to purchase acquired by compliance with the provisions of section 2348.

2. Coal lands may be entered only after survey and by legal subdivisions. The lands must be vacant and unappropriated and must contain workable deposits of coal and must not be valuable for mines of gold, silver, or copper. Lands containing lignites are included under the term "coal lands."

3. Entry by an individual may be made only by a person above the age of twenty-one years who is a citizen of the United States or has declared his intention to become such, and shall not embrace more than one hundred and sixty acres. Entry by an association of persons may embrace three hundred and twenty acres, but each person composing the association must be qualified as in the case of an individual entryman. A corporation is held to be an association under the provisions of the coal-land law.

4. When an association of not less than four persons, severally qualified as required in the case of an individual entryman, shall have expended not less than $5,000 in working and improving a mine or mines of coal upon the public lands, such association may enter not exceeding six hundred and forty acres, including such mining improvements.

5. But one entry of coal lands by any person or association of persons is allowed by the law. No person who, and no association any member of which, either as an individual or as a member of an association, shall have had the benefits of the law may enter or hold any other coal lands thereunder. The right so to enter or hold is exhausted whether an entry embraces in any instance the maximum area allowed by the law or less; also by the acquisition of a preference right of entry unless sufficient cause for the abandonment thereof is shown. Assignment of a preference right of entry under section 2348, Revised Statutes, will not hereafter be recognized.

6. Information will be furnished registers and receivers by the Commissioner of the General Land Office of the price at which all coal lands in their respective districts will be offered. The local land officers will from time to time be furnished with schedules and maps (1) showing lands known to lie without ascertained coal areas and open to entry under the general land laws, according to the character of each particular tract; (2) showing lands known to contain workable deposits of coal, whereon prices will be fixed upon information derived from field examination; and (3) showing lands containing coal of such character as may, from their location at a distance from transportation lines, be sold at the minimum price fixed by the statute as hereinafter stated.

Local land officers will allow *coal* entries for lands in the first and third classes at the minimum price fixed by the statute, and for those in the second class at the prices stated in the schedules and maps furnished them. Lands listed in classes 2 and 3 are subject to entry under the coal-land laws only, unless shown by the applicant to be of such character as to be subject to entry under some other law. For those lands listed as of the first and third classes (when entered under the coal-land laws) the price is not less than $10 per

acre when situated more than fifteen miles from a completed railroad and $20 when situated within fifteen miles of a completed railroad; and where the lands lie partly without such limit, the higher price must be paid for each smallest legal subdivsion the greater part of which lies within fifteen miles of such railroad. The term "completed railroad" is construed to mean a railroad *actually constructed, equipped,* and *operating* at the date of entry. The distance is to be calculated from the point on such railroad nearest the lands applied for, and the facts in each case must be shown by the affidavit of the applicant, corroborated by the affidavit of some disinterested credible person having actual knowledge thereof.

7. A preference right of entry accrues only where a person or association of persons, severally qualified, have opened and improved a coal mine or mines upon the public lands and shall be in actual possession thereof and not by the filing of a declaratory statement. A perfunctory compliance with the law in this respect will not suffice, but a mine or mines of coal must be in fact opened and improved on the land claimed.

There is no authority under which a coal mine upon public lands, entry not having been made, may be worked and operated for profit and sale of the coal, or beyond the *opening* and *improving* of the mine as a condition precedent to a preference right under section 2348 of the Revised Statutes. To preserve a preference right of entry specified in the statute the person or association of persons having acquired the same must present to the register of the proper land district, within sixty days from the date of actual possession and commencement of improvements upon the land, a declaratory statement therefor in all cases where the township plat has been filed. When the township plat is not on file at the date of such improvement such declaratory statement must be presented within sixty days from the receipt of such plat at the district land office.

8. After entry has been allowed the local officers have no authority to order a hearing or make further determination with respect to it, except upon instructions from the General Land Office. They will, however, receive all protests against it and promptly forward them, together with a statement of the facts shown by their records, for consideration and action.

9. Prior to entry it is competent for the local officers to order a hearing on sufficient grounds set forth under oath by any protestant.

10. When it is sought to purchase otherwise than in the exercise of a preference right the party will himself make oath to the following application, which must be presented to the register:

I, , hereby apply, under the provisions of the Revised Statutes of the United States relating to the sale of coal lands of the United States, to purchase the quarter of section , in township of range , in the district of lands subject to sale at the land office at , and containing acres; and I solemnly swear that no portion of said tract is in the possession of any other party or parties who has or have commenced improvements thereon for the development of coal; that I am twenty-one years of age; a citizen of the United States (or have declared my intention to become a citizen of the United States), and have never held, except or purchased any lands under said act, either as an individual or

as a member of an association; that I make this application in good faith for my own benefit, and not, directly or indirectly, in whole or in part, in behalf of any other person or persons whomsoever; and I do further swear that I am well acquainted with the character of said described land, and with each and every legal subdivision thereof; that my knowledge of said land is such as to enable me to testify understandingly with regard thereto; that said land contains workable deposits of coal; that there is not to my knowledge within the limits thereof any valuable vein or lode of quartz or other rock in place bearing gold, silver, or copper, and that there is not within the limits of said land, to my knowledge, any valuable deposit of gold, silver, or copper. So help me God.

11. Where a preference right of entry is sought to be preserved the required declaratory statement must be substantially as follows:

I, , do hereby declare my intention to purchase, in the exercise of a preference right, under the provisions of the Revised Statutes of the United States relating to the sale of the coal lands of the United States, the quarter of section of township of range , in the district of the lands subject to sale at the district land office at ; and I do solemnly swear that I am years of age and a citizen of the United States (or have declared my intention to become a citizen of the United States); that I have never, either as an individual or as a member of an association, held, except or purchased any coal lands under the aforesaid provisions of the Revised Statutes; that I was in possession of, and commenced improvements on, said tract on the day of , A.D. 19 , and have ever since remained in actual possession continuously; that I have opened and improved a valuable mine of coal thereon, and have expended in labor and improvements on said mine the sum of dollars, the labor and improvements being as follows: (Here describe the nature and character of the improvements); and I do furthermore solemnly swear that I am well acquainted with the character of said described land and with each and every legal subdivision thereof; that my knowledge of said land is such as to enable me to testify understandingly with regard thereto; that there is not, to my knowledge, within the limits thereof any valuable vein or lode of quartz or other rock in place bearing gold, silver, or copper, and that there is not within the limits of said land, to my knowledge, any valuable deposit of gold, silver, or copper. So help me God.

12. One year from and after the expiration of the period allowed for filing the declaratory statement is given within which to make proof and payment; but the local officers will allow no party to make final proof and payment except on special written notice to all others who appear on their records as claimants to the same tract. No notice will be given to parties whose declaratory statements have expired by limitation under the law.

13. A declarant will not be permitted to file after the expiration of the sixty days allowed nor to exercise a preference right of purchase after the expiration of the year.

14. When it is sought to purchase, in the exercise of a preference right, the applicant must himself make the following affidavit, which must be presented to the register:

I, , claiming, under the provisions of the Revised Statutes of the United States relating to the sale of the coal lands of the United States, the preference right to purchase the quarter of section , in township of range , subject to sale at the district land office at , hereby apply to purchase and enter the same; and I do solemnly swear that I have not hitherto held, except or purchased, either as an individual or as a member of an association, any coal lands under the aforesaid provisions of the law; that I have expended in developing coal mines on said tract, in labor and improvements, the sum of dollars, the nature of such improvements being as follows: ; that I am now in the actual possession of said mines, and make the entry in good faith for my own benefit, and not, directly or indirectly, in whole or in part, in behalf of any person or persons whomsoever; and I do furthermore swear that I am well acquainted with the character of said described land, and with each and every legal subdivision thereof; that my knowledge of said land is such as to enable me to testify understandingly with regard thereto; that said land contains workable deposits of coal; that there is not, to my knowledge, within the limits thereof any valuable vein or lode of quartz or other rock in place bearing gold, silver, or copper, and that there is not within the limits of said land, to my knowledge, any valuable deposits of gold, silver, or copper. So help me God.

15. Where purchase and entry, whether in the exercise of a preference right or otherwise, is made by an association, each member thereof must subscribe and swear to the application or affidavit, the necessary changes being made to cover the joint possession and expenditure and the purchase and entry in their joint interest.

16. Each application, declaratory statement, and affidavit, forms whereof are given above, must be verified before the register or receiver in the land district wherein the lands involved are situate. Under this regulation no verification can be made outside of such land district.

17. Upon the filing of an application to purchase coal lands under the provisions of paragraphs 10 or 14 the applicant will be required, at his own expense, to publish a notice of said application in a newspaper nearest the lands, to be designated by the register, for a period of thirty days, during which time a similar notice must be posted in the local land office and in a conspicuous place on the land. The notice should describe the land applied for and state that the purpose thereof is to allow all persons claiming the land applied for, or desiring to show that the applicant's coal entry should not be allowed for any reason, an opportunity to file objections with the local land officers.

Publication must be made sufficiently in advance to permit entry within the year specified by the statute.

18. After the thirty days period of newspaper publication has expired, the claimant will furnish from the office of publication a sworn statement (including an attached copy of the published notice) that the notice was published for the required period, giving the first and last date of such publication, and his own affidavit, or that of some credible person having personal knowledge of the fact, showing that the notice aforesaid remained conspicu-

ously posted upon the land sought to be patented during said thirty days publication, giving the dates. The register shall certify to the fact that the notice was posted in his office for the full period of thirty days, the certificate to state distinctly when such posting was done and how long continued, giving the dates. In no case shall entry be allowed until the proofs specified have been filed.

19. Of the following forms, the one appropriate to the sections of the Revised Statutes under which application is made should be used for publication of all notices of application to enter coal lands:

Notice for publication

COAL ENTRY

(Sec. 2347, R. S.)

Land Office,

, 19 .

Notice is hereby given that , of , county of , State (or Territory) of , has this day filed in this office his application to purchase, under the provisions of section 2347, U. S. Revised Statutes, the of section No. , township No. , range No. .

Any and all persons claiming adversely the lands described, or desiring to object for any reason to the sale thereof to applicant, should file their affidavits of protest in this office on or before the day of , 19 , otherwise the application may be allowed.

———— ————,

Register.

Notice for publication

COAL ENTRY

(Secs. 2348–52, R. S.)

Land Office,

, 19 .

Notice is hereby given that , of , county of , State (or Territory) of , who, on the day of , 19 , filed in this office his coal declaratory statement for the of section No. , township No. , range No. , has this day filed in this office his application to purchase said land under the provisions of sections 2348 to 2352, U. S. Revised Statutes.

Any and all persons claiming adversely the lands described, or desiring to object for any reason to the entry thereof by applicant, should file their affidavits of protest in this office on or before the day of , 19 .

———— ————,

Register.

20. When it is sought to purchase, either by ordinary cash entry or in the exercise of a preference right, the register, if he finds the tract applied for is vacant, surveyed, and unappropriated, and that the claimant has complied with all the laws and regulations relating to the acquisition of coal lands, will so certify to the receiver, stating the prescribed purchase price, and the applicant must then pay the same.

21. The receiver will then issue to the purchaser a duplicate receipt, and at the close of the month the register and receiver will make returns of the sale to the General Land Office, whence, if the proceedings are found to be regular, a patent will be issued; and on surrender of the duplicate receipt such patent will be delivered, at the option of the patentee, either by the Commissioner at Washington or by the register at the district land office.

22. An application for cash entry will be subject to any valid adverse right which may have attached to the same land pursuant to section 2348, Revised Statutes.

23. Qualified persons or associations who are lawfully in possession of tracts of coal lands which are still unsurveyed may, under sections 2401, 2402, and 2403, Revised Statutes, as amended by the act of August 20, 1894, apply to the surveyor-general for the survey of the township or townships? or portions thereof, embracing the lands claimed, to be specified as nearly as practicable. Each such application must be accompanied by the affidavit of the applicant or applicants, duly corroborated by at least two competent persons, setting forth the qualifications of the former as claimant or claimants of the land, the facts constituting their possession, the character of the land, and such other facts in the case as are essential in that connection. If the surveyor-general approves the application he will thereupon transmit it to the General Land Office with the affidavits and his report.

24. The "Rules of practice in cases before the United States district land offices, the General Land Office, and the Department of the Interior" will, as far as applicable, govern all cases and proceedings arising under the statutes providing for the sale of coal lands.

25. Local officers will report at the close of each month as "sales of coal lands" all filings and entries in separate abstracts, commencing with No. 1 and thereafter proceeding consecutively in the order of their reception. Where a series of numbers has already been commenced by sale of coal lands they will continue the same without change.

Coal Lands in Alaska

[Act June 6, 1900 (31 Stat., 658).]

AN ACT To extend the coal-land laws to the district of Alaska

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That so much of the public-land laws of the United States are hereby extended to the district of Alaska as relate to coal lands, namely sections twenty-three hundred and forty-seven to twenty-three hundred and fifty-two, inclusive, of the Revised Statutes.

[Act April 28, 1904 (33 Stat. 525).]

AN ACT To amend an act entitled "An act to extend the coal-land laws to the district of Alaska," approved June sixth, nineteen hundred

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any person or association of persons qualified to make entry under the coal-land laws of the United States, who shall have opened or improved a coal mine or coal mines on any of the unsurveyed public lands of the United States in the district of Alaska, may

locate the lands upon which such mine or mines are situated, in rectangular tracts containing forty, eighty, or one hundred and sixty acres, with north and south boundary lines run according to the true meridian, by marking the four corners thereof with permanent monuments, so that the boundaries thereof may be readily and easily traced. And all such locators shall, within one year from the passage of the Act or within one year from making such location, file for record in the recording district, and with the register and receiver of the land district in which the lands are located or situated, a notice containing the name or names of the locator or locators, the date of the location, the description of the lands located, and a reference to such natural objects or permanent monuments as will readily identify the same.

SEC. 2. That such locator or locators, or their assigns, who are citizens of the United States, shall receive a patent to the lands located by presenting, at any time within three years from the date of such notice, to the register and receiver of the land district in which the lands so located are situated an application therefor, accompanied by a certified copy of a plat of survey and field notes thereof, made by a United States deputy surveyor or a United States mineral surveyor duly approved by the surveyor-general for the district of Alaska, and a payment of the sum of ten dollars per acre for the lands applied for; but no such application shall be allowed until after the applicant has caused a notice of the presentation thereof, embracing a description of the lands, to have been published in a newspaper in the district of Alaska published nearest the location of the premises for a period of sixty days, and shall have caused copies of such notice, together with a certified copy of the official plat of survey, to have been kept posted in a conspicuous place upon the land applied for and in the land office for the district in which the lands are located for a like period, and until after he shall have furnished proof of such publication and posting, and such other proof as is required by the coal-land laws: *Provided*, That nothing herein contained shall be so construed as to authorize entries to be made or title to be acquired to the shore of any navigable waters within said district.

SEC. 3. That during such period of posting and publication, or within six months thereafter, any person or association of persons having or asserting any adverse interest or claim to the tract of land or any part thereof sought to be purchased shall file in the land office where such application is pending, under oath, an adverse claim, setting forth the nature and extent thereof, and such adverse claimant shall, within sixty days after the filing of such adverse claim, begin an action to quiet title in a court of competent jurisdiction within the district of Alaska, and thereafter no patent shall issue for such claim until the final adjudication of the rights of the parties, and such patent shall then be issued in conformity with the final decree of such court therein.

SEC. 4. That all the provisions of the coal-land laws of the United States not in conflict with the provisions of this Act shall continue and be in full force in the district of Alaska.

RULES AND REGULATIONS

1. Persons or associations of persons locating or entering coal lands in

the district of Alaska under the provisions of the act of April 28, 1904 (33 Stat. L., 525), amendatory of the act of June 6, 1900 (31 Stat. L., 330), are required to possess the qualifications of persons or associations making entry under the general coal-land laws of the United States, and are subject to the same limitations.

2. The lands must be vacant and unappropriated, and must contain deposits of coal, and must not be valuable for mines of gold, silver, or copper. Lands containing lignites are included under the term "coal lands."

3. Entry by an individual may be made only by a person above the age of twenty-one years, who is a citizen of the United States, and shall not embrace more than one hundred and sixty acres. Entry by an association of persons may embrace three hundred and twenty acres, but each person composing the association must be qualified as in the case of an individual entryman. A corporation is held to be an association under the provisions of the coal-land law.

4. When an association of not less than four persons, severally qualified as required in the case of an individual entryman, shall have expended not less than $5,000 in working and improving a mine or mines of coal upon the public lands, such association may enter not exceeding six hundred and forty acres, including such mining improvements.

5. But one entry of coal lands by any person or association of persons is allowed by the law. No person who, and no association any member of which, either as an individual or as a member of an association, shall have had the benefits of the law may enter or hold other coal lands thereunder. The right so to enter or hold is exhausted, whether an entry embraces in any instance the maximum area allowed by the law or less.

6. There is no authority under which a coal mine upon public lands, entry not having been made, may be worked and operated for profit and sale of the coal, or beyond the *opening and improving* of the mine as a condition precedent to the right to apply for patent.

7. The requirement of the statute with respect to the form of the tract sought to be entered is construed to mean that the boundary lines of each entry must be run in cardinal directions, i.e., due north and south and east and west lines, by reference to a true meridian (not magnetic), with the exception of meander lines on meanderable streams and navigable waters forming a part of the boundary lines of a location. Those meander lines which form part of the boundary of a claim will be run according to the directions in the Manual of Surveying Instructions, but other boundary lines will be run in true east and west and north and south directions, thus forming rectangles, except at intersections with meandered lines.

8. The permanent monuments to be placed at each of the four corners of the tract located may consist of —

First. A stone at least 24 inches long, set 12 inches in the ground, with a conical mound of stone 1½ feet high, 2 feet base, alongside.

Second. A post at least 3 feet long by 4 inches square, set 18 inches in the ground, and surrounded by a substantial mound of stone or earth.

Third. A rock in place; and, whenever possible, the identity of all corners should be perpetuated by taking courses and distances to bearing trees,

rocks, or other objects, permanent objects being selected for bearings whenever possible.

9. It is further provided by the first section of the act that within one year from the date of the passage of the act or within one year from making the location there shall be filed for record in the recording district and with the register and receiver of the land district in which the land is situated a notice containing the name or names of the locator or locators, the date of the location, the description of the lands located, and a reference to such natural objects or permanent monuments as will readily identify the same. In other words, the notice should contain a complete description in every particular of the claim as it is marked and monumented upon the ground.

10. By the second section of the act the locator or his assigns is allowed three years from the date of filing the notice prescribed in the first section of the act within which to file an application with the local land officers for patent for the land claimed. It will thus be seen that persons or associations of persons claiming coal lands in that district at the date of the passage of the act have four years from location or from the date of the act within which to present their applications for patent.

11. Persons or associations of persons who fail to record their notices within the time prescribed by the first section of the act, or fail to file application for patent in the time prescribed by the second section, forfeit their rights to the particular tract located.

12. With the application for patent the claimant must file a certified copy of the plat of survey and field notes thereof made by a United States deputy surveyor or a United States mineral surveyor, duly approved by the surveyor-general for the district of Alaska. Under this clause of the act it will be allowable for the claimant, at his own expense, to procure the making of a survey by one of the officials mentioned without first making application to the surveyor-general, but the survey when made is to be submitted to and approved by the surveyor-general and by him numbered serially.

13. The survey must be made in strict conformity with or be embraced within the lines of the location as appears from the record thereof with the recorder in the recording district, and must be made in accordance with the regulations relative to lode and placer mining claims so far as they are applicable.

14. Upon the presentation of an application for patent, if no reason appears for rejecting it, it will be received by the register and receiver and the claimant required to publish a notice thereof for the period of sixty days in a newspaper in the district of Alaska published nearest the location of the particular lands, and to cause a copy thereof, together with a certified copy of the official plat of survey, to be posted and remain posted throughout the period of publication in a conspicuous place upon the land applied for, and the register will post a copy of such notice and official plat in his office for the same period. When the notice is published in a weekly newspaper nine consecutive insertions are necessary; when in a daily newspaper, the notice must appear in each issue for sixty-one consecutive issues. In both cases the first day of issue must be excluded in estimating the period of sixty days.

15. The notice so published must embrace all the data given in the notice posted upon the claim and in the local land office. In addition to such data, the published notice must further indicate the locus of the claim by giving the connecting line, as shown by the field notes and plat, between a corner of the claim and a United States mineral monument or a corner of the public survey, if there is one, and fix the boundaries of the claim by courses and distances.

The publication in the newspaper and the posting upon the land and in the local land office must cover the same period of time.

16. Upon the expiration of the sixty-day period prescribed the claimant may file in the local land office a sworn statement from the office of publication, to which shall be attached a copy of the notice published, to the effect that the notice was published for the statutory period, giving the first and last day of such publication, and his own affidavit showing that the plat and notice aforesaid remained conspicuously posted upon the claim sought to be patented during the sixty-day period of publication, giving the dates. The register will also file with the record a certificate showing that the notice and plat were posted in his office for the full period of sixty days, such certificate to state distinctly when such posting was done and how long continued.

Not earlier than six months after the expiration of the period of publication, if no objections are interposed or adverse claim filed, entry may be allowed upon payment of the price per acre specified by the act, which is $10 per acre in all cases.

17. The proviso to the second section of the act is as follows:

That nothing herein contained shall be so construed as to authorize entries to be made or title to be acquired to the shore of any navigable waters within said district.

The term "shore" is defined to mean the land lying between high and low water marks of any navigable waters within said district.

18. Section 3 provides for the assertion by any person or association of persons of an adverse claim, and requires that such adverse claim shall be filed during the period of posting and publication or within six months thereafter; that it shall be under oath, and set forth the nature and extent thereof.

19. An adverse claim may be verified by the oath of the adverse claimant or by the oath of any duly authorized agent or attorney in fact of the adverse claimant cognizant of the facts stated, and when verified by such agent or attorney in fact he must distinctly swear that he is such agent or attorney in fact and accompany his affidavit by proof thereof. The adverse claimant should set forth fully the nature and extent of the interference or conflict by filing with his adverse claim a plat showing his entire claim and its situation or position with relation to the one against which he claims; whether he claims as a purchaser for valuable consideration or as a locator; if the former, a certified copy of the original location, the original conveyance or duly certified copy thereof, or an abstract of title from the office of the proper recorder should be furnished, or, if the transaction was a merely verbal one, he will narrate the circumstances attending the purchase, the date thereof,

and amount paid, which facts will be supported by the affidavits of one or more witnesses, if any were present at the time; and if he claims as locator, he must file a duly certified copy of the location notice from the office of the proper recorder and his affidavit of continued ownership.

20. Upon the filing of such adverse claim within the sixty days period of posting and publication, or within six months thereafter, the party who files the adverse claim shall, under the act, within sixty days after the filing of such adverse claim, begin an action to quiet title in a court of competent jurisdiction within the district of Alaska.

21. All papers filed should have indorsed upon them the precise date of filing; and upon the filing of an adverse claim within the time prescribed by the statute all proceedings on the application for patent will be suspended, with the exception of the completion of the publication and posting of notice and plat and filing the necessary proof thereof, until final adjudication of the rights of the parties. In cases of final judgment rendered the party entitled under the decree must, before he is allowed to make entry, file a certified copy thereof.

22. Where such suit has been dismissed a certificate of the clerk of the court to that effect or a certified copy of the order of dismissal will be sufficient. Where no suit has been commenced against the application for patent within the statutory period, a certificate to that effect by the clerk of the Territorial court having jurisdiction will be required.

23. In connection with the foregoing, it is to be borne in mind that by section 4 of the act it is declared:

That all the provisions of the coal-land laws of the United States not in conflict with the provisions of this act shall continue and be in full force in the district of Alaska.

24. An assignment to a qualified person of a preference right of entry under the act of April 28, 1904, will be recognized when properly executed. Proof and payment by the assignee must be made, however, in the same manner and within the same time as though there had been no assignment.

25. The following forms for notice of location and application for patent should be used:

NOTICE OF LOCATION

I, , of , having on the day of , 19 , opened and improved a coal mine on the following-described tract (here describe the lands by metes and bounds in rectangular form with north and south boundary lines run according to the true meridian, and a reference to such natural or permanent objects as will readily identify the same), do hereby locate the same as provided by the Alaska coal-land act of April 28, 1904 (33 Stats., 525); and I do solemnly swear that I am a citizen of the United States (or have declared my intention to become a citizen of the United States); that I am over the age of twenty-one years; that I have never either as an individual or as a member of an association held, except , or purchased any coal lands of the United States; that I have remained in actual possession of said land continuously since the day of , 19 ; that I have expended in labor and improvements on said mine the

sum of dollars, the labor and improvements being as follows (here describe the nature and character of such improvements); and I do furthermore solemnly swear that I am well acquainted with the character of said described lands and with each and every portion thereof; that my knowledge of said lands is such as to enable me to testify understandingly with regard thereto; that there is not, to my knowledge, within the limits thereof any valuable vein or lode of quartz or other rock in place bearing gold, silver, copper, or other valuable minerals, and that there is not within the limits of said land, to my knowledge, any valuable deposits of gold, silver or copper or other minerals. So help me God.

_____.

Dated , 19 .
(Jurat.)

APPLICATION FOR PATENT

I, , claiming under the provisions of the act of April 28, 1904 (33 Stats., 525), amendatory of the act of June 6, 1900 (31 Stats., 658), extending the coal-land laws to the district of Alaska, do hereby apply to purchase the lands described in the accompanying field notes and plat and subject to sale at the district land office at , Alaska; and do solemnly swear that my title to said tract is as follows: as will more fully appear by the certified copy of location notice and abstract of title filed herewith; that I am above the age of twenty-one years, and a citizen of the United States; that I have not hitherto held, except , or purchased, either as an individual or as a member of an association, any coal lands under the provisions of the coal-land laws; that I have expended in developing coal mines on said tract, in labor and improvements, the sum of dollars, the nature of said improvements being as follows: ; that I am now in the actual possession of said mines and make the entry in good faith for my own benefit, and not, directly or indirectly, in whole or in part, in behalf of any person or persons whomsoever; and I do furthermore swear that I am well acquainted with the character of said described land, and with each and every portion thereof; that my knowledge of said land is such as to enable me to testify understandingly with regard thereto; that said land contains deposits of coal; that there is not, to my knowledge, within the limits thereof any valuable vein or lode of quartz or other rock in place bearing gold, silver, copper, or other valuable minerals, and that there is not within the limits of said land, to my knowledge, any valuable deposits of gold, silver, copper, or other minerals. So help me God.

_____.

Jurat.

26. The notice of location and the application for patent, the forms of which are given above, may be sworn to by the claimant before any officer authorized by law to administer oaths, but the authority of said officer must be properly shown.

27. Any party duly qualified under the law, *after* swearing to his notice of location or application for patent, may, by a sufficient power of attorney duly executed under the laws of the State or Territory in which such party

may be then residing, empower an agent to file with the register of the proper land office the notice of location or application for patent, and also authorize him to make payment for and entry of the lands in the name of such qualified party; and when such power of attorney shall have been filed in the local land office such agent may act thereunder as indicated, but no person will be permitted to act as such agent for more than four applicants.

28. Where a claimant shows by affidavit that he is not personally acquainted with the character of the land, any qualified person may make the required affidavit as to its character; but whether this affidavit is made by the claimant or by another it must be corroborated by the affidavits of two disinterested and credible witnesses having personal knowledge of the facts.

29. The "Rules of practice in cases before the United States district land offices, the General Land Office, and the Department of the Interior," will, as far as applicable, govern all cases and proceedings arising under the statutes providing for the sale of coal lands.

30. Local officers will report at the close of each month as "sales of coal lands" all filings and entries in separate abstracts, commencing with number one and thereafter proceeding consecutively in the order of their reception.

Where a series of numbers has already been commenced by sale of coal lands, they will continue the same without change.

STATE AND TERRITORIAL MINING LAWS

[Only the State Statutes concerning property rights in mines and mining claims and water rights are given. The purely "police" laws, designed to secure the safety of miners or the general public, such as regulations concerning ventilation, handling and storing explosives, hoisting signals, etc., are, of course, strictly local in their operation and not within the scope of a one-volume treatise. Persons interested can usually secure pamphlet copies of such laws of any State by addressing the State Mine Inspector thereof or similar official.

In some of the States certain provisions of the penal code relating in a particularly direct manner to mining are given as they would perhaps be otherwise inaccessible to many readers of this book and a knowledge of them may be of great importance to mine operators and owners. The laws recently enacted in many of the States, often largely as the result of the commendable efforts of the American Mining Congress, providing for the criminal prosecution of the promoters of fraudulent or "wildcat" mining schemes are given for the same reasons. These contemptible frauds are a great detriment to legitimate mining interests and every means of preventing and punishing the vampires who "promote" them should be encouraged by real miners. What is most needed in this connection is the enactment of such laws by the older, non-metal mining States, as here the greater number of victims are found. The numerous changes and additions made by the sessions of the State legislatures of mining States at their sessions of 1907 are included in this compilation. These are specially important in Montana and Nevada.]

ARIZONA, p. 419.
CALIFORNIA, p. 427.
COLORADO, p. 431.
IDAHO, p. 447.
MONTANA, p. 457.
NEVADA, p. 462.
NEW MEXICO, p. 496.
OREGON, p. 510.
SOUTH DAKOTA, p. 518.
UTAH, p. 526.
WASHINGTON, p. 531.
WYOMING, p. 541.

TERRITORY OF ARIZONA

BEING TITLE XLVII OF THE REVISED STATUTES OF 1901

SECTION 1. On the discovery of mineral in place on the public domain of the United States, the same may be located as a mining claim by the discoverer for himself, or for himself and others, or for others.

SEC. 2. Such location shall be made by erecting at or contiguous to the point of discovery a conspicuous monument of stones not less than three feet in height, or an upright post, securely fixed, projecting at least four feet above the ground, in which monument of stones or on which post there shall be posted a location notice, which shall be signed by the name or names of the locator or locators. The location notice must contain:

1. The name of the claim located.
2. The name or names of the locators.
3. The date of the location.
4. The length and width of the claim in feet, and the distance in feet from the point of discovery to each end of the claim.

5. The general course of the claim.

6. The locality of the claim with reference to some natural object or permanent monument whereby the claim can be identified.

SEC. 3. Until each and all of the above specified things shall have been done, no right thereto shall have been acquired.

SEC. 4. From the time of the location of a mining claim, as above specified, the locator shall be allowed ninety days within which to do or cause to be done the following things:

1. To cause to be recorded in the office of the County Recorder of the county in which the claim is situated a copy of the location notice.

2. To sink a discovery shaft in the claim to a depth of at least ten feet from the lowest part of the rim of the shaft at the surface, and deeper, if necessary, until there is disclosed in said shaft mineral in place.

3. To monument the claim on the ground so that its boundaries can be readily traced.

SEC. 5. The failure to do all the things enumerated in this section in the time and place specified shall be construed into an abandonment of the claim, and all right and claim thereto of the discoverer and locator shall be forfeited.

SEC. 6. Such surface boundaries shall be marked by six substantial posts projecting at least four feet above the surface of the ground, or by substantial stone monuments at least three feet high, to wit: One at each corner of said claim and one at the center of each end-line thereof.

SEC. 7. Any open cut, adit or tunnel which shall be made as above provided for, as a part of the location of a lode mining claim, and which shall be equal in amount of work to a shaft ten feet deep and four feet wide by six feet long, and which shall cut a lode or mineral in place at a depth of ten feet from the surface, shall be equivalent, as a discovery work, to a shaft sunk from the surface.

SEC. 8. Location notices may be amended at any time and the monuments changed to correspond with the amended location: *Provided*, That no change shall be made that will interfere with the rights of others.

SEC. 9. The amount of assessment or representation work or improvements to be done or made during each year, after the completion of the location as heretofore provided, and the time for doing the same, shall be as provided by the laws of the United States.

SEC. 10. Within three months after the expiration of the period of time fixed for the performance of annual labor or the making of improvements upon any mining claim, the person on whose behalf such work or improvement was made, or some person for him knowing the facts, may make and record in the office of the County Recorder of the county wherein such claim is situated, an affidavit, in substance as follows:

Territory of Arizona, County of ss. being duly sworn, deposes and says that he is a citizen of the United States and more than twenty-one years of age, resides at in County, Arizona Territory, and is personally acquainted with the mining claim known as mining claim, situated in mining district, Arizona Territory, the location notice of which is recorded in the office of the County Recorder of said County, in book of records of

mines, at page . That between the day of A.D. and the day of A. D. at least dollars' worth of work and improvements were done and performed upon said claim, not including the location work of said claim. Such work and improvements were made by and at the expense of owners of said claim, for the purpose of complying with the laws of the United States pertaining to assessments of annual work, and (here name the miners or men who worked upon the claim in doing the work) were the men employed by said owner and who labored upon said claim, did said work and improvements, the same being as follows, to wit: (Here describe the work done.)

(Signature) _____

Subscribed and sworn to before me this day of A.D.

My commission as Notary Public expires on the day of A.D.

(Notarial Seal) _____

Notary Public.

SEC. 11. Such affidavit, when so recorded, shall be prima facie evidence of the performance of such labor or such improvements, and said original affidavit, after it has been recorded, or a certified copy thereof, or the record thereof shall be received as evidence accordingly by the courts of this Territory. The location of an abandoned or forfeited claim shall be made in accordance with the provisions of Paragraph 3232 (Sec. 2), of Title 47, Chapter XLVII [1] of the Revised Statutes of Arizona, 1901, except that the relocator may, if he so elect, perform his location work by sinking the original location shaft ten feet deeper than it was orginally, or in case the orginal location work consisted of a tunnel or open cut, he may perform his location work by extending said tunnel or open cut by removing therefrom 240 cubic feet of rock or vein material. (As amended by Act approved Mar. 12, 1907.)

SEC. 12. The locator of a placer mining claim shall locate his claim in the following manner: By posting a location notice thereon containing the name of the claim, the name of the locator or locators, the date of location and the number of acres claimed, a description of the claim with reference to some natural object or permanent monument that will identify the claim by marking the boundaries of his claim with a post or monument of stones at each angle of the claim located. When a post is used, it must be at least four inches by four feet six inches in length, set one foot in the ground and surrounded by a mound of stone or earth.

SEC. 13. Where it is practically impossible, on account of a bed of rock or precipitous ground, to sink such posts, they may be placed in a pile of stones. And if for any reason it is impossible to erect and maintain a post or monument of stone at any angle of such claim, a witness post or monument may be used, said witness monument to be placed as near the true corner as the nature of the ground will permit. When a mound of stone is used, it must be at least three feet in height and four feet in diameter at the base.

SEC. 14. The locator of any placer claim shall, within sixty days after the date of location of such claim, have a copy of the location notice claim

[1] This is sec. 2, p. 419, in this compilation.

recorded in the office of the County Recorder of the county in which said placer claim may be situated. Any record of the location of a placer mining claim which shall not contain all the requirements of this section shall be void.

SEC. 15. Whenever a co-owner or co-owners shall give to a delinquent co-owner or co-owners the notice in writing or notice by publication provided for in section twenty-three hundred and twenty-four (2324) of the Revised Statutes of the United States, an affidavit of the person giving such notice, stating the time, place, manner of service and by whom and upon whom such service was made, shall be attached to a true copy of such notice, and such notice and affidavit must be recorded in the office of the County Recorder of the county in which the mining claim is situate within ninety (90) days after giving the notice; or, if such notice is given by publication in a newspaper, there shall be attached to a printed copy of such notice an affidavit of the editor, publisher, or foreman of such paper, stating the date of the first, last and each insertion of such notice therein, and when and where the newspaper was published during that time and the name of such newspaper. Such affidavit and notice shall be recorded as aforesaid within one hundred and eighty days after the first publication thereof.

SEC. 16. The original of such notice and affidavits, or the records thereof, shall be evidence that the delinquent mentioned in section 2324 has failed or refused to contribute his portion of the expenditure required by that section, and of the services or publication of said notice: *Provided*, The writing or affidavit hereinafter provided for is not of record.

SEC. 17. If such delinquent shall, within the ninety days required by Section 2324 aforesaid, contribute to his co-owner or co-owners his proportion of such expenditures, such co-owner or co-owners shall sign and deliver to the delinquent or delinquents, a writing, stating that the delinquent or delinquents, by name, has, within the time required by Section 2324 of the Revised Statutes of the United States, contributed his share for the year upon the mine, and further stating therein the districts, county and territory wherein the same is situate, and the book and page where the location notice is recorded. Such writing shall be recorded in the office of the County Recorder of said county.

SEC. 18. If such co-owner or co-owners shall fail to sign and deliver such writing to the delinquent or delinquents within twenty days after such contribution, the co-owner or co-owners, so failing as aforesaid, shall be liable to a penalty of one hundred dollars, to be recovered by any person for the use of the delinquent or delinquents in any court of competent jurisdiction. If such co-owner or co-owners fail to deliver such writing within said twenty days, then the delinquent, with two disinterested persons having personal knowledge of said contribution, may make an affidavit, setting forth in what manner the amount of, to whom and upon what mine such contribution was made. Such affidavit, or a record thereof, in the office of the County Recorder of the county in which said mine is situate, shall be *prima facie* evidence of such contribution.

SEC. 19. In all actions, judgments, grants or conveyances it shall be a sufficient description of a mining claim if it can be intelligently learned there-

from the name of the claim, the district, county and territory where it is situate, and the book and page where the location notice thereof is recorded.

SEC. 20. The County Recorders of the several counties are authorized and required to procure suitable books in which the records of all mines and mineral deposits shall be kept, which said books shall be paid for out of the County Treasury.

SEC. 21. Nothing in this Act shall be so construed as to affect the claims to mines and mineral deposits heretofore located and duly recorded.

DRAINAGE

SEC. 22. Whenever adjacent or contiguous mines, occupied and worked upon the same or upon separate lodes, have a common ingress of water, or by reason of subterranean communication of water have a common drainage, it shall be the duty of the owners, lessees or occupants of said mine so related, to provide for their proportionate share of such drainage, or to prevent the water in such mine from flowing in or upon neighboring mines, thereby imposing upon them an unjust burden.

SEC. 23. If any owners, lessees or occupants of any such mine shall fail or neglect to provide for the drainage thereof, and by reason of such failure or neglect, the owners, lessees, or occupants of any adjacent or contiguous mine are compelled to pump or drain or otherwise provide for the water flowing in from such first mentioned mine, then and in such event the owners, lessees or occupants of the mine so in default shall pay, respectively, to those performing the work of drainage their proportion of the actual and necessary cost and expense of pumping, draining or otherwise providing for said water, and if they fail or refuse to make such payment, the same may be recovered by an action in any court of competent jurisdiction.

SEC. 24. It shall be lawful for all mining corporations or companies and all individuals engaged in mining having thus a common interest in draining such mines to unite for the purposes of affecting the same under such common name and upon such terms and conditions as may be agreed upon; and every such association having filed a certificate of incorporation, as provided by law, shall be deemed a corporation, with all the rights, incidents and liabilities of a body corporate so far as the same may be applicable.

SEC. 25. Failing mutually to agree as indicated in the preceding section for drainage jointly, one or more of said parties may undertake the work of drainage, after giving reasonable notice to the other parties interested as aforesaid, and should the remaining parties then fail, neglect or refuse to unite in equitable arrangements for doing or sharing the expense thereof, they shall be subject to an action therefor as already specified, to be enforced in any court of competent jurisdiction.

SEC. 26. When an action is commenced, as provided herein, to recover the costs and expenses for draining a lode or mine, it shall be lawful for the plaintiff to apply to the court, or to the judge thereof in vacation, for an order to inspect and examine the lodes or mines claimed to have been drained by the plaintiff, and upon affidavit that such inspection or examination is necessary for a proper preparation of the case for trial, the court or judge shall grant an order for the underground inspection and examination of the lode

or mine described in the petition. Such order shall designate the number of persons, not exceeding three, besides the plaintiff or his representative, who may examine and inspect such lode and mines, and take measurements for the purpose of showing the amount of water taken from the lode or mine, or the number of fathoms of ground mined and worked out of the lode or mines claimed to have been drained, the cost of such examination and inspection to be borne by the party applying therefor. The court or judge shall have power to cause the removal of any rock, debris or any other obstacle in any lode or vein when such removal is shown to be necessary to a just determination of the question involved; *Provided*, That no such order for inspection and examination shall be made except upon notice of at least three days, nor unless it appears that the plaintiff has been refused the privilege of making the examination by the defendant, his or their agent.

SEC. 27. The provisions hereof shall not apply to unopened or undeveloped mines, but shall apply to all opened and developed mines which derive a benefit from being drained.

ASSAYS AT UNIVERSITY AND RECORDING NOTICES

SEC. 28. The regents of the University of Arizona shall charge for assaying ores taken from deposits and mines within the Territory of Arizona no higher rate than one dollar for each assay producing gold and silver, and two dollars for assays producing gold, silver and copper, and two dollars and fifty cents for assaying ores showing more than three metals; that the maximum rate for an assay shall be two dollars and fifty cents and the minimum rate for an assay shall be one dollar.

SEC. 29. There shall be a uniform fee of one dollar charged by each County Recorder in the Territory of Arizona for recording each notice of location of a mining claim, including certificate of work done to comply with the law regarding locations, the said one dollar to be in full for filing, recording and indexing said notice and certificate and certifying to the same under seal.

(Took effect March 16, 1901.)

WATER AND WATER RIGHTS

141 (SEC. 1). That paragraph 3741 [of Revised Code] be amended so as to read as follows:

Appropriation of Water

Any person or persons, company or corporation shall have the right to appropriate any of the unappropriated waters or the surplus or flood waters in this territory for beneficial use for irrigation, mining, or manufacturing purposes, subject to existing rights, and such person or persons, company or corporation for the purpose of making such appropriation of waters as herein specified shall have the right to construct and maintain reservoirs, dams, canals, ditches, flumes, and any and all other necessary water ways. And the person or persons, company or corporation, first appropriating water for the purposes herein mentioned shall always have the better right to the same.

142 (SEC. 2). That paragraph 3743 be amended so as to read as follows:

Contract to Deliver

All corporations, associations or individuals, owning, managing or con-

trolling any canals, irrigating ditches, flumes, pipe lines or other means for conveying water from any public stream in this territory, on or to the lands of occupants, for the purpose of irrigating said lands, shall not contract to deliver for such purpose more water than the said canals, ditches, flumes, or pipe lines may be estimated to carry at any one time, whether such contract be made for measured time or acreage quantity.

143 (SEC. 3). That paragraph 3744 be amended to read as follows:

Ditches in Order — Damages

Such persons, associations or corporations, as provided for in the preceding section shall at all times keep their ditches, canals, flumes or pipe lines in good repair and condition, so as to carry the full amount of water that such persons, association or corporation have contracted to carry and deliver to the persons contracted with, during the time specified in such contract, and a failure to deliver the quantity of water contracted for, when there be sufficent in the stream or head, shall make such persons, corporations or associations liable for all damages that may arise or be sustained by the parties entitled to water from said carriers.

144 (SEC. 4). That paragraph 3774 be amended so as to read as follows:

Natural Channels

Whenever storage reservoirs shall be constructed in the Territory of Arizona, and water stored therein for subsequent distribution for irrigation or other beneficial use in times of shortage of water, the owners of such reservoirs, or of the right to the use of the waters stored therein, shall have the right to make use of the natural channels of streams in this territory to conduct said waters to the place or places where they shall desire to use said waters, or have them used, and to divert the same from said natural channels at such places as shall be most convenient for said purposes.

Approved March 21, 1901, Session Laws 1901, page 1483.

WATER STORAGE RESERVOIRS

County Reservoir — Board of Water Storage Commissioners

105 (SEC. 1). Any county in the Territory of Arizona having an assessed valuation of eight million dollars or over may avail itself of the benefits of this Act by complying with the provisions as hereinafter provided. The board of supervisors, upon the petition of fifty qualified electors and freeholders of said county, shall request the district judge (of the district) in which the county is located to appoint a board of water storage commissioners, and the judge shall within ten days thereafter appoint five qualified electors, who shall be resident freeholders of said county, who shall be known and designated as the board of water storage commissioners. Each of said commissioners shall hold office for one year and until his successor is appointed and qualified. Before entering upon the duties of his office he shall give bond in the sum of one thousand dollars payable to the said county for the faithful performance of his duty. Said bond shall be approved by and filed with the board of supervisors of said county. At its first meeting the board shall organize by the election of one of its members as president. It shall also elect a secretary, who may or may not be of its number. The

compensation for the members of said board shall be five dollars per day for each day actually employed. They shall also be allowed their actual traveling expenses. The salary of the secretary shall be fixed by the board. The board shall establish and maintain an office at the county seat of said county. It shall be the duty of said water storage commissioners to examine reservoir sites, cause to be made surveys and soundings, determine the capacity and estimate the cost of construction of said proposed reservoir or reservoirs, dam or dams, determine the extent of the water shed and rainfall thereon; to collect such other information as shall show the water available for storage use in said county for irrigating purposes; to provide for the accumulation of such other information as may be required therefor and cause abstracts therefrom to be published in some newspaper published and of general circulation in said county; to employ and fix the compensation of a competent engineer or engineers, to prepare plans, specifications and estimates for said reservoirs and dams, and file a copy of the same with the clerk of the board of supervisors of said county; to employ and fix the compensation of legal counsel in any matters arising under this act or necessary to authorize the construction of the dam or reservoirs referred to in said act, and to select the most available reservoir site or sites; and to acquire the same, together with any rights of way necessary over public or private property, by purchase or through eminent domain, in the name of said county of Maricopa, and for the benefit of the people of said county, and to negotiate with and obtain agreements from canal companies in relation to the distribution of water or its delivery to the point of ultimate use, and to co-operate with or contribute towards the expenses of any investigations now being or hereafter to be made by the United States geological survey and to transfer to the National Government any reservoir site or rights therein or thereto or connected therewith, which may have been acquired hereunder in the event that the National Government should undertake the construction of the reservoir.

Tax to Defray Expenses — Water Storage Fund

106 (SEC. 2). For the purpose of defraying the expenses of the board of water storage commissioners, the board of supervisors of any county availing itself of this act, shall, at the time of levying territorial and county taxes, in the year 1901 and in the year 1902, levy an additional tax of one and one-half mills on the dollar on all taxable property within the said county, to be collected as other taxes are collected, and the same shall be denominated and known as a water storage fund. The board of water storage commissioners shall audit and approve all bills for expenses incurred under the provisions of this act, and present the same, together with the claims for their salaries and expenses, to the board of supervisors, who shall, if found correct, pay the same out of any money in the water storage fund.

Approved March 20, 1901. Session Laws of 1901, page 1474.

Fines and Forfeitures

4197 (SEC. 30). All fines and forfeitures, recovered for the use and benefit of any public acequia, shall be applied by the overseers to the improvements, excavations and repairs, which may be necessary on said acequia, and for the

construction of bridges where they may be crossed by any public street or road.

Appeal

4198 (SEC. 31). In all cases of conviction under this chapter, an appeal shall be allowed to the probate court, which appeal shall be taken and conducted as all other appeals from the decisions of the justices of the peace.

When Law Enforced

4199 (SEC. 32). The regulations of acequias, which have been worked according to the laws and customs of Sonora and the usages of the people of Arizona, shall remain as they were made and used up to this day, and the provisions of this chapter shall be enforced and observed from the day of its publication.

Plants and Trees

4200 (SEC. 33). All plants and trees of any description growing on the banks of any acequia shall belong to the owners of the land through which said acequia may run.

Spring or Running Stream

4201 (SEC. 34). Any person owning lands which may include a spring or stream of running water, or owning lands upon a river where there is not population sufficient to form a public acequia, may construct a private acequia for his own uses, subject to his own regulations, provided it does not interfere with the rights of others.

Repeal

3326 (SEC. 28). All laws conflicting with the provisions of this chapter are hereby repealed.

Approved March 10, 1887.

The foregoing chapter is from the Compiled Laws, Chapter LV., p. 538.

FOR TAXATION PURPOSES

Land Office Entries

SEC. 83. The County Clerk of each county shall from time to time and as often at least as once in each year procure from the land office a list of all lands and mineral claims within his county which have been entered in the land office and shall keep a list thereof in his office which shall be a public record. Session Laws, 1902, p. 83.

Approved March 22, 1902.

CALIFORNIA

[ALL SPECIAL STATUTES RELATING TO MINING IN CALIFORNIA HAVE BEEN REPEALED AND MINING IS GOVERNED BY THE U. S. STATUTES ALONE]

WATER RIGHTS

1410. The right to the use of running water flowing in a river or stream or down a cañon or ravine may be acquired by appropriation.

1411. The appropriation must be for some useful or beneficial purpose, and when the appropriator or his sucessor in interest ceases to use it for such a purpose, the right ceases.

1412. The person entitled to the use may change the place of diversion, if others are not injured by such change, and may extend the ditch, flume, pipe, or aqueduct by which the diversion is made to places beyond that where the first use was made.

1413. The water appropriated may be turned into the channel of another stream and mingled with its water, and then reclaimed; but in reclaiming it the water already appropriated by another must not be diminished.

1414. As between appropriators, the one first in time is the first in right.

1415. A person desiring to appropriate water must post a notice, in writing, in a conspicuous place at the point of intended diversion, stating therein:

1. That he claims the water there flowing to the extent of (giving the number) inches, measured under a four-inch pressure;

2. The purposes for which he claims it, and the place of intended use;

3. The means by which he intends to divert it, and the size of the flume, ditch, pipe, or aqueduct in which he intends to divert it.

A copy of the notice must, within ten days after it is posted, be recorded in the office of the Recorder of the county in which it is posted.

1416. Within sixty days after the notice is posted, the claimant must commence the excavation or construction of the works in which he intends to divert the water, and must prosecute the work diligently and uninterruptedly to completion, unless temporarily interrupted by snow or rain.

1417. By "completion" is meant conducting the waters to the place of intended use.

1418. By a compliance with the above rules the claimant's right to the use of the water relates back to the time the notice was posted.

1419. A failure to comply with such rules deprives the claimants of the right to the use of the water as against a subsequent claimant who complies therewith.

1420. Persons who have heretofore claimed the right to water, and who have not constructed works in which to divert it, and who have not diverted nor applied it to some useful purpose, must, after this title takes effect, and within twenty days thereafter, proceed as in this title provided, or their right ceases. Civil Code, Annotated, Title viii.

An Act entitled an Act relating to the Working, Right of Way, Easement, and Drainage of Mines in the State of California

Affidavit of Expenditure

Sec. 1. Whenever any mine owner, company, or corporation shall have performed the labor and made the improvements required by law for the location and ownership of mining claims or lodes, such owner, company or corporation shall file, or cause to be filed, within thirty days after the time limited for performing such labor or making such improvements, with the County Recorder of Deeds of the county in which the mine or claim is situated, particularly describing the labor performed and improvements made, and the value thereof, which affidavit shall be *prima facie* evidence of the facts therein stated. Upon the failure of any claimant or mine owner to comply with the conditions of this act, in the performance of labor, or making of improvements upon any claim, mine or mining ground, the claim or mine upon

which such failure occurred shall be opened to re-location in the same manner as if no location of the same had ever been made. But if, previous to re-location, the original locators, their heirs, assigns, or legal representatives, resume work upon such claim, and continue the same with reasonable diligence until the required amount of labor has been performed or improvements made, and the required statement of accounts and affidavits filed with the County Recorder, then the claim shall not be subject to re-location because of previous failure to file accounts. Upon the failure of any one of the several co-owners to contribute his portion of the expenditures required hereby, the co-owners who have performed the labor or made the improvements may, at the expiration of the year, give such delinquent co-owner personal notice, in writing, or by publication in the newspaper published nearest the claim, for at least once a week for ninety days; and if, at the expiration of ninety days after such notice in writing or publication, such delinquent shall fail or refuse to contribute his portion of the expenditures required by this section, his interest in the claim shall become the property of his co-owners who made the required expenditures. A copy of such notice, together with an affidavit showing personal service or publication, as the case may be, of such notice, when filed or recorded with the Recorder of Deeds of the county in which such mining claim is situated, shall be evidence of the acquisition of title of such co-owners. Where a person or company has or may run a tunnel or cut for the purpose and in good faith, for the purpose of developing a lode, lodes, or claims owned by said person, or company, or corporation, the money so expended in running said tunnel shall be taken and considered as expended on said lodes or claims; *provided further*, that said lode, claim or claims shall be distinctly marked on the surface as provided by law.

Right of Way

SEC. 2. All mining locations and mining claims shall be subject to a reservation of the right of way through or over any mining claims, ditches, roads, canals, cuts, tunnels, and other easements, for the purpose of working other mines; *provided*, that any damage occasioned thereby shall be assessed and paid for in the manner provided by law for land taken for public use under the right of eminent domain.[1]

Local Customs

SEC. 748 (§ 621). In actions respecting mining claims, proof must be admitted of the customs, usages, or regulations established and in force at the bar or diggings embracing such claim; and such customs, usages, or regulations, when not in conflict with the laws of this State, must govern the decision of the action.

Code of Civil Procedure, 1886, p. 346.

Partnership Property

SEC. 2515. The mining ground owned and worked by partners in mining, whether purchased with partnership funds or not, is partnership property.

Civil Code, 1886, p. 424.

[1] This section is said to be unconstitutional. See Lindley on Mines, sec. 263.

Mines Within Patented Townsites

Sec. 1. Section fifteen of an act entitled "An act to authorize and direct the county judges of the several counties of this State to execute certain trusts in relation to the town lands granted to the unincorporated towns in this State by the Act of Congress entitled 'An act for the relief of the inhabitants of cities and towns upon the public lands,' approved March second, eighteen hundred and sixty-seven," approved March thirtieth, eighteen hundred and sixty-eight, is hereby amended so as to read as follows:

Proceeding to Secure Title

Sec. 15. If within six months after the giving of the public notice that the plat of any townsite has been filed in the Recorder's office, as provided in section twelve of this act, there shall remain any unoccupied or vacant unclaimed lands, or lands not previously surveyed into town lots under the provisions of this act, and any person has hitherto or shall hereafter discover gold in any portion thereof in quantities which he may deem sufficient to justify the profitable working thereof (his judgment thereon to be conclusive), and has located and held the same bona fide for mining purposes, such mining possession shall constitute him a preferred purchaser thereof, from the judge of the Superior Court, according to the metes and bounds of his location thereof, within the meaning of this act; and he may apply to the judge of the Superior Court for a deed thereto, which application he shall accompany with a deposit to be held by such judge in an amount to be estimated by him sufficient to pay the expenses of a survey and the platting thereof as herein provided for. . . . Approved March 9, 1897. Session Laws, 1897, p. 93.

Judgments, Records and Work Done

Sec. 1. Section eleven hundred and fifty-nine of an act entitled an act to establish a Civil Code, approved March twenty-first, eighteen hundred and seventy-two, is hereby amended to read as follows:

1159. Judgments affecting the title to or possession of real property, authenticated by the certificate of the clerk of the court in which such judgments were rendered (and notices of location of mining claims), may be recorded without acknowledgment, certificate of acknowledgment, or further proof. The record of all notices of location of mining claims heretofore made in the proper office without acknowledgment or certificate of acknowledgment, or other proof, shall have the same force and effect for all purposes as if the same had been duly acknowledged, or proved and certified as required by law. Affidavits showing work or posting of notices upon mining claims may also be recorded in the recorder's office of the county where such mining claims are situated. Approved March 9, 1897. Session Laws, 1897, p. 97.

Fraudulent Representations Concerning Corporations, etc.

Sec. 1. Every director, officer, or agent of any corporation or joint-stock association, who knowingly concurs in making, publishing, or posting, either generally or privately, to the stockholders or other persons dealing with such corporation or its stock, any written report, exhibit, or statement of its af-

fairs or pecuniary condition, or book or notice containing any material statement which is false, or any untrue or willfully or fraudulently exaggerated report, prospectus, account, statement of operations, values, business, profits, expenditures, or prospects, or any other paper or document intended to produce or give, or having a tendency to produce or give, the shares of stock in such corporation a greater value or less apparent or market value than they really possess, or refuses to make any book or post any notice required by law, in the manner required by law, is guilty of a felony. (As amended Mar. 21, 1905, amending Sec. 564 of Penal Code.)

COLORADO

[The section numbers are those used in Mills Annotated Statutes, 1891 and Sup. 1905.]

AN ACT CONCERNING MINES

Length of Lode Claims

SECT. 3148. The length of any lode claim hereafter located may equal but not exceed fifteen hundred feet along the vein.

Width

SEC. 3149. The width of lode claims hereafter located in Gilpin, Clear Creek, Boulder and Summit counties shall be seventy-five feet on each side of the center of the vein or crevice; and in all other counties the width of the same shall be one hundred and fifty feet on each side of the center of the vein or crevice: *Provided*, That hereafter any county may, at any general election, determine upon a greater width, not exceeding three hundred feet on each side of the center of the vein or lode, by a majority of the legal votes cast at said election, and any county, by such vote at such election, may determine upon a less width than above specified.

Location Certificate Recorded

SEC. 3150. The discoverer of a lode shall, within three months from the date of discovery, record his claim in the office of the recorder of the county in which such lode is situated, by a location certificate, which shall contain 1st, the name of the lode; 2d, the name of the locator; 3d, the date of location; 4th, the number of feet in length claimed on each side of the center of the discovery shaft; 5th, the general course of the lode as near as may be.

SEC. 3151. Any location certificate of a lode claim which shall not contain the name of the lode, the name of the locator, the date of location, the number of lineal feet claimed on each side of the discovery shaft, the general course of the lode, and such description as shall identify the claim with reasonable certainty shall be void.

Discovery Shaft and Staking

SEC. 3152. Before filing such location certificate the discoverer shall locate his claim by: *First* sinking a discovery shaft upon the lode, to the depth of at least ten feet from the lowest part of the rim of such shaft at the surface, or deeper, if necessary, to show a well-defined crevice. *Second*, by posting at the point of discovery on the surface a plain sign of notice containing the

name of the lode, the name of the locator, and the date of discovery. *Third*, by marking the surface boundaries of the claim.

SEC. 3153. Such surface boundaries shall be marked by six substantial posts hewed or marked on the side or sides which are in toward the claim, and sunk in the ground, to wit: One at each corner and one at the center of each side line. Where it is practically impossible on account of bed-rock or precipitous ground to sink such posts, they may be placed in a pile of stones, and where in marking the surface boundaries of a claim, any one or more of such posts shall fall by right upon precipitous ground, where the proper placing of it is impracticable or dangerous to life or limb, it shall be legal and valid to place any such post at the nearest practicable point, suitably marked to designate the proper place.

What Equivalent to a Discovery Shaft

SEC. 7. Any open cut, cross-cut, or tunnel, which shall cut a lode at the depth of ten feet below the surface, shall hold such lode the same as if a discovery shaft were sunk thereon, or an adit of at least ten feet in along the lode from the point where the lode may be in any manner discovered, shall be equivalent to a discovery shaft.

Sixty Days to Sink

SEC. 8. The discoverer shall have sixty days from the time of uncovering or disclosing a lode to sink a discovery shaft thereon.

Claim Defined by the Surface Lines

SEC. 9. The location or location certificate of any lode claim shall be construed to include all surface ground within the surface lines thereof, and all lodes and ledges throughout their entire depth, the top or apex of which lies inside of such lines extended downward, vertically, with such parts of all lodes or ledges as continue by dip beyond the side lines of the claim, but shall not include any portion of such lodes or ledges beyond the end lines of the claim or the end lines continued, whether by dip or otherwise, or beyond the side lines in any other manner than by the dip of the lode.

SEC. 10. If the top or apex of a lode in its longitudinal course extends beyond the exterior lines of the claim at any point on the surface, or as extended vertically downward, such lode may not be followed in its longitudinal course beyond the point where it is intersected by the exterior lines.

Right of Way and Right of Surface

SEC. 11. All mining claims now located, or which may be hereafter located, shall be subject to the right of way of any ditch or flume for mining purposes, or of any tramway or pack trail, whether now in use, or which may be hereafter laid out across any such location: *Provided, always*, That such right of way shall not be exercised against any location duly made and recorded, and not abandoned prior to the establishment of the ditch, flume, tramway, or pack trail, without consent of the owner, except by condemnation, as in case of land taken for public highways. Parol consent to the location of any such easement, accompanied by the completion of the same

over the claim, shall be sufficient without writings: *And Provided further*, That such ditch or flume shall be so constructed that the water from such ditch or flume shall not injure vested rights by flooding or otherwise.

SEC. 12. When the right to mine is in any case separate from the ownership or right of occupancy to the surface, the owner or rightful occupant of the surface may demand satisfactory security from the miner, and if it be refused, may enjoin such miner from working until such security is given. The order for injunction shall fix the amount of bond.

Relocation by the Owner

SEC. 13. If at any time the locator of any mining claim heretofore or hereafter located, or his assigns, shall apprehend that his original certificate was defective, erroneous, or that the requirements of the law had not been complied with before filing; or shall be desirous of changing his surface boundaries, or of taking in any part of an overlapping claim which has been abandoned; or in case the original certificate was made prior to the passage of this law, and he shall be desirous of securing the benefits of this act, such locator or his assigns may file an additional certificate, subject to the provisions of this act: *Provided*, That such relocation does not interfere with the existing rights of others at the time of such relocation, and no such relocation or other record thereof shall preclude the claimant or claimants from proving any such title or titles as he or they may have held under previous location.

Relocation of Abandoned Claims

SEC. 16. The relocation of abandoned lode-claims shall be by sinking a new discovery shaft and fixing new boundaries in the same manner as if it were the location of a new claim; or the relocator may sink the original discovery shaft ten feet deeper than it was at the time of abandonment, and erect new, or adopt the old boundaries, renewing the posts, if removed or destroyed. In either case a new location stake shall be erected. In any case, whether the whole or part of an abandoned claim is taken, the location certificate may state that the whole or any part of the new location is located as abandoned property.

One Record for Each Claim

SEC. 17. No location certificate shall claim more than one location, whether the location be made by one or several locators. And if it purport to claim more than one location, it shall be absolutely void, except as to the first location therein described. And if they are described together, or so that it cannot be told which location is first described, the certificate shall be void as to all.

Approved February 13, 1874. Session Laws, 1874, page 185.

AN ACT CONCERNING MINES

Right of Survey and Inspection

SEC. 1. In all actions pending in any district court of this State, wherein the title or right of possession to any mining claim shall be in dispute, the said court, or the judge thereof, may, upon the application of any of the parties to such suit, enter an order for the underground as well as surface

survey of such part of the property in dispute as may be necessary to a just determination of the question involved. Such order shall designate some competent surveyor, not related to any of the parties to such suit, nor in anywise interested in the result of the same; and upon the application of the party adverse to such application, the court may also appoint some competent surveyor, to be selected by such adverse applicant, whose duty it shall be to attend upon such survey, and observe the method of making the same; said second surveyor to be at the cost of the party asking therefor. It shall also be lawful in such order to specify the names of witnesses named by either party, not exceeding three on each side, to examine such property, who shall hereupon be allowed to enter into such property and examine the same. Said court, or the judge thereof, may also cause the removal of any rock, débris, or other obstacle in any of the drifts or shafts of said property, when such removal is shown to be necessary to a just determination of the questions involved: *Provided*, however, that no such order shall be made for survey and inspection, except in open court or in chambers, upon notice of application for such order of at least six days, and not then except by agreement of parties, or upon the affidavit of two or more persons that such survey and inspection is necessary to the just determination of the suit, which affidavits shall state the facts in such case, and wherein the necessity for survey exists, nor shall such order be made unless it appears that the party asking [therefor] had been refused the privilege of survey and inspection by the adverse party.

Unlawful Entry on Mining Property

SEC. 3165. In all cases when two or more persons shall associate themselves together for the purpose of obtaining the possession of any lode, gulch, or placer claim, then in actual possession of another, by force and violence, or threats of violence, or by stealth, and shall proceed to carry out such purpose by making threats against the party or parties in possession, or who shall enter upon such lode or mining claim for the purpose aforesaid, or who shall enter upon or into any lode, gulch, placer claim, quartz mill, or other mining property, or not being upon such property, but within hearing of the same, shall make any threats, or make use of any language, signs, or gestures, calculated to intimidate any person or persons at work on said property from continuing to work thereon or therein, or to intimidate others from engaging to work thereon or therein, every such person so offending shall, on conviction thereof, be fined in a sum not to exceed two hundred and fifty dollars, and be imprisoned in the county jail not less than thirty days nor more than six months; such fine to be discharged either by payment or by confinement in said jail until such fine is discharged at the rate of two dollars and fifty cents per day. On trials under this section, proof of a common purpose of two or more persons to obtain possession of property as aforesaid, or to intimidate laborers as above set forth, accompanied or followed by any of the acts above specified by any of them, shall be sufficient evidence to convict any one committing such acts, although the parties may not be associated together at the time of committing the same.

Guilty of Murder

SEC. 3166. If any person or persons shall associate and agree to enter or

attempt to enter by force of numbers and the terror such numbers is calculated to inspire, or by force and violence, or by threats of violence against any person or persons in the actual possession of any lode, gulch, or placer claim, upon or into such lode, gulch or placer claim, and upon such entry or attempted entry, any person or persons shall be killed, said persons, and all and each of them so entering or attempting to enter, shall be deemed guilty of murder in the first degree, and punished accordingly. Upon the trials of such cases, any person or parties cognizant of such entry, or attempted entry, who shall either be present, aiding and assisting, or shall by promise of money, property, influence, assistance, or other thing of value, in any wise encourage such entry, or attempted entry, shall be deemed a principal in the commission of said offense.

As amended 1886.

Placer Mining Claims

Location Certificate Recorded

Sec. 3136. The discoverer of a placer claim shall, within thirty days from the date of discovery, record his claim in the office of the recorder of the county in which said claim is situated, by a location certificate, which shall contain: *First*, the name of the claim, designating it as a placer claim. *Second*, the name of the locator. *Third*, the date of location. *Fourth*, the number of acres or feet claimed. And *Fifth*, a description of the claim by such reference to natural objects or permanent monuments as shall identify the claim.

Before filing such location certificate, the discoverer shall locate his claim: *First*, by posting upon such claim a plain sign or notice, containing the name of the claim, the name of the locator, the date of discovery, and the number of acres or feet claimed. *Second*, by marking the surface boundaries with substantial posts, and sunk into the ground, to wit: one at each angle of the claim.

Assessment Work

Sec. 3137. On each placer claim of one hundred and sixty acres or more heretofore or hereafter located, and until a patent has been issued therefor, not less than one hundred dollars' worth of labor shall be performed or improvements made by the first day of August, 1879, and by the first day of August of each year thereafter. On all placer claims containing less than one hundred and sixty acres, the expenditure during each year shall be such proportion of one hundred dollars as the number of acres bears to one hundred and sixty. On all placer claims containing less than twenty acres, the expenditures during each year shall not be less than twelve dollars; but when two or more claims lie contiguous, and are owned by the same person, the expenditure hereby required for each claim may be made on any one claim; and upon a failure to comply with these conditions, the claim or claims upon which such failure occurred shall be open to relocation in the same manner as if no location of the same had ever been made. *Provided*, that the original locators, their heirs, assigns, or legal representatives, have not resumed work upon the claim after failure and before such location: *Provided*, the aforesaid expenditures may be made in building or repairing ditches to conduct water

upon such ground or in making other mining improvements necessary for the working of such claim.

Upon the failure of any one of several co-owners to contribute his proportion of expenditures required hereby, the co-owners who have performed the labor or made the improvements may, at the expiration of the year, to wit: the first of August, 1879, for the locations heretofore made, and one year from the date of locations hereafter made, give such delinquent co-owner personal notice in writing, or if he be a non-resident of the State, a notice by publication in the newspaper published nearest the claim for at least once a week for ninety days, and mailing him a copy of such newspaper if his address be known; and if, at the expiration of ninety days after such notice in writing, or after the first publication of such notice, such delinquent should fail or refuse to contribute his proportion of the expenditure required by this action [section], his interest in the claim shall become the property of his co-owners who have made the required expenditures.

[The foregoing was filed in the office of the Secretary of State by the Governor, March 12, 1879, without his signature, and became a law under Sction 11, Art. IV, Constitution of Colorado.]

MISCELLANEOUS GENERAL LAWS

Penal Provisions

False Weights for Weighing Gold, etc.

Sec. 1380. If any person shall knowingly have, keep, or use any false or fraudulent scales or weights for weighing gold or gold dust, or any other article or commodity, every such person so offending shall, on conviction, be fined not exceeding five hundred dollars, or imprisoned in the county jail not exceeding six months.

Punishment for Certain Mill-Owners

Sec. 1381. The owner, manager, or agent of any species of quartz mill, arastra mill, furnace, or cupel, employed in extracting gold from quartz, pyrites, or other minerals, who shall neglect or refuse to account for, or pay over and deliver all the proceeds thereof to the owner of such quartz, pyrites, or other minerals, excepting such portion of said proceeds as he is entitled to in return for his services, shall, on conviction, be fined in a sum not exceeding one thousand dollars, or be imprisoned in the penitentiary for a term not exceeding one year.

Salting Ores

Sec. 1391. That every person who shall mingle or cause to be mingled with any sample of gold or silver bearing ore, any valuable metal or substance whatever, that will increase or in any way change the value of said ore, with the intent to deceive, cheat, or defraud any person or persons, shall, on conviction thereof, be punished by a fine of not less than $500 nor more than $1,000, or by confinement in the penitentiary for a term of not less than one nor more than fourteen years, or by both such fine and imprisonment.

Destroying Landmarks

Sec. 1423. That if any person or persons shall wilfully and maliciously deface, remove, pull down, injure, or destroy any location stake, side-post,

corner-post, landmark, or monument, or any other legal land boundary monument in this state, designating, or intending to designate, the location, boundary; or name of any mining claim, lode, or vein of mineral or the name of the discoverer, or date of discovery thereof, the person or persons so offending shall be guilty of a misdemeanor, and, on conviction thereof, shall be fined not more than one thousand dollars, or imprisoned not more than one year, at the discretion of the court; *Provided*, that this act shall not apply to abandoned property.

Buying Stolen Ore

SEC. 3231. Any person, association, or corporation, or the agent of any person, association, or corporation, who shall knowingly purchase or contract to purchase, or shall make any payment for or on account of any ore which shall have been taken from any mine or claim, by persons who have taken or may be holding possession of any such mine or claim, contrary to any penal law now in force, or which may be hereafter enacted, shall be considered as an accessory after the fact to the unlawful holding or taking of such mine or claim, and upon conviction shall be subjected to the same punishment to which the principals may be liable.

Punishment for False Mill Weights

SEC. 3232. Any person, association, or corporation, or the agent of any person, association or corporation engaged in the business of milling, sampling, concentrating, reducing, shipping, or purchasing ores, as aforesaid, who shall keep or use any false or fraudulent scales or weights for weighing ore, or who shall keep or use any false or fraudulent assay scales or weights for ascertaining the assay value of ore, knowing them to be false, every person so offending shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined in a sum not exceeding one thousand (1,000) dollars, nor less than one hundred (100) dollars, or imprisonment not more than one year, or both, at the discretion of the court.

Punishment for False Mill Returns

SEC. 3233. Any person, corporation, or association, or the agent of any person, corporation, or association, engaged in the milling, sampling, concentrating, reducing, shipping, or purchasing of ores in this state, who shall, in any manner, knowingly alter or change the true value or any ores delivered to him or them, so as to deprive the seller of the result of the correct value of the same, or who shall substitute other ores for that delivered to him or them, or who shall issue any bill of sale or certificate of purchase that does not exactly and truthfully state the actual weight, assay value, and total amount paid for any lot or lots of ore purchased, or who, by any secret understanding or agreement with another, shall issue a bill of sale or certificate of purchase that does not truthfully and correctly set forth the weight, assay value, and total amount paid for any lot or lots of ore purchased by him or them, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined in a sum not exceeding one thousand (1,000) dollars, nor less than one hundred (100) dollars, or imprisonment not more than one year, or both, at the discretion of the court.

Larceny of Ores

SEC. 3234. If any person shall break, sever or separate with intent to steal, ore or mineral from any mine, lode, ledge or deposit in this State, or shall take, remove or conceal ore or mineral from any mine, lode, ledge, deposit or dump, with intent to defraud the owner or owners, lessee or licensee, or any tenant in possession of any mine, lode, ledge, deposit or dump, or any person in possession and claiming under color of title any mine, lode, ledge, or dump, such persons shall be deemed guilty of grand larceny, and upon conviction shall be punished as for grand larceny.

SEC. 3235. All acts and parts of acts in conflict with this act are hereby repealed.

As amended April 9, 1907.

DRAINAGE OF MINES

Proportionate Share of Drainage

SEC. 3172. Whenever contiguous or adjacent mines upon the same or upon separate lodes have a common ingress of water, or from subterraneous communication of the water, have a common drainage, it shall be the duty of the owners, lessees, or occupants of each mine so related to provide for their proportionate share of the drainage thereof.

Failure to Drain Mines

SEC. 3173. Any parties so related, failing to provide, as aforesaid, for the drainage of the mines owned or occupied by them, thereby imposing an unjust burden upon neighboring mines whether owned or occupied by them, shall pay respectively to those performing the work of drainage, their proportion of the actual and necessary cost and expense of doing such drainage, to be recovered by an action in any court of competent jurisdiction.

Draining Corporation

SEC. 3174. It shall be lawful for all mining corporations or companies, and all individuals engaged in mining, having thus a common interest in draining such mines, to unite for the purpose of effecting the same, under such common name and upon such terms and conditions as may be agreed upon; and every such association, having filed a certificate of incorporation, as provided by law, shall be deemed a corporation, with all the rights, incidents, and liabilities of a body corporate, so far as the same may be applicable.

Failure to Mutually Agree

SEC. 3175. Failing to mutually agree, as indicated in the preceding section, for drainage jointly, one or more of the said parties may undertake the work of drainage, after giving reasonable notice; and should the remaining parties then fail, neglect or refuse to unite in equitable arrangements for doing the work, or sharing the expense thereof, they shall be subject to an action therefor as already specified, to be enforced in any court of competent jurisdiction.

Court Procedure

SEC. 3176. When action is commenced to recover the cost and expenses for draining a lode or mine, it shall be lawful for the plaintiff to apply to the

court, if in session, or to the judge thereof in vacation, for an order to inspect or examine the lodes or mines claimed to have been drained by the plaintiff; or some one for him, shall make affidavit that such inspection or examination is necessary for a proper preparation of the case for trial. The court or judge shall grant an order for the underground inspection and examination of the lode or mines described in the petition. Such order shall designate the number of persons, not exceeding three besides the plaintiff or his representative, to examine and inspect such lode and mines, and take the measurement thereof, relating the amount of water drained from the lode or mine, or the number of fathoms of ground mined and worked out of the lode or mines claimed to have been drained, the cost of such examination and inspection to be borne by the party applying therefor. The court or judge shall have the power to cause the removal of any rock, débris, or other obstacles in any lode or vein, when such removal is shown to be necessary to a just determination of the question involved; *Provided*, that no such order for inspection and examination shall be made except in open court, or at chambers, upon notice of application for such order of at least three days, and not then except by agreement of parties, nor unless it appears that the plaintiff has been refused the privilege of making the inspection and examination by the defendant, his or their agent.

Water Beyond Control

SEC. 3177. That hereafter, when any person or persons, or corporation, shall be engaged in mining or milling, and in the prosecution of such business shall hoist or raise water from the mines or natural channels, and the same shall flow away from the premises of such persons, or corporations, to any natural channel or gulch, the same shall be considered beyond the control of the party so hoisting or raising the same, and may be taken and used by other parties the same as that of natural water-courses.

Liable for Injury

SEC. 3178. After any such water shall have been so raised, and the same shall have flown into any such natural channel, gulch, or draw, the party so hoisting or raising the same shall only be liable for injury caused thereby, in the same manner as riparian owners along natural water-courses.

Undeveloped Mines

SEC. 3179. The provisions of this act shall not be construed to apply to incipient or undeveloped mines, but to those only which shall have been opened, and shall clearly derive a benefit from being drained.

Admissible Evidence

SEC. 3180. In trial of cases arising under this act, the court shall admit evidence of the normal stand, or position of the water while at rest in an idle mine, also the observed prevalence of a common water level, or a standing water line in the same, or separate lodes; also, the effect (if any) the elevating or depressing the water by natural or mechanical means, in any given lode, has upon elevating or depressing the water in the same, contiguous, or separate lodes or mines; also the effect which draining or ceasing to drain any given lode or mine had upon the water in the same or contiguous

or separate lodes or mines, and all other evidence which tends to prove the common ingress or subterraneous communication of water into the same lode or mine, or contiguous or separate lodes or mines.

ORE

Contents of Record of Ore Delivered

SEC. 3227. That every person, association, or corporation that shall be engaged in the business of milling, sampling, concentrating, reducing, shipping, or purchasing ores in the State of Colorado, shall keep and preserve a book in which shall be entered at the time of the delivery of each lot of ore:

First. The name of the party on whose behalf such ore is delivered, as stated.

Second. The name of the teamster, packer, or other persons actually delivering such ore, and the name of the owner of the team or pack train delivering such ore.

Third. The weight or amount of every such lot of ore.

Fourth. The name and location of the mine or claim from which it shall be stated that the same has been mined or procured.

Fifth. The date of delivery of any and all lots or parcels of ore.

Proceedings when Ore is Stolen

SEC. 3228. Whenever affidavit shall have been made before any police magistrate of any town in this State, or any justice of the peace of any county, by any person, that ore has been stolen from him, stating as near as may be the amount and value of the ore stolen, such person upon presentation of a certified copy of such affidavit, shall have access to such book, and may examine the entries which may have been made therein during a period of fifteen days next preceding the filing of such affidavit; *Provided*, that the person making such affidavit shall, at the time of making the same, have a present interest in the product of the mine or claim from which said ore has been stolen, or in the ore alleged to have been stolen.

Failure to Keep Required Books

SEC. 3229. Every person, association, or corporation that shall fail or refuse to keep the book required by the terms of the first section of this act, or shall fail or refuse to make any proper entry therein, or who shall make any false entry therein, or who shall refuse to any person who may be entitled to the same, as provided by section two (2) of this act, the right of inspection thereof, shall forfeit and pay for each and every violation of the provisions of said section a penalty of not less than fifty (50) nor more than three hundred (300) dollars, to be collected by action of debt at the suit of any person who may sue for the same. In addition to such penalty, any person, association, or corporation violating the provisions of said first section shall be liable at the suit of the party or persons aggrieved, in the proper form of action, for all damages which may accrue to any party or person by reason of any such violation. And in all actions the fact that a false entry has been made shall be *prima facie* evidence that the same was made willfully or knowingly.

Failure to Make Inquiries

SEC. 3230. If any person, association, or corporation shall fail or neglect to make inquiries necessary to the making of the proper entries in said book, as provided in section one (1) of this act, or shall so negligently make entries therein that any lot of ore cannot be particularly identified, or so negligently that it cannot be perceived therefrom what person delivered any lot of ore or received the proceeds of the same, when purchased, or shall fail to keep such book, or shall wilfully suffer the same to be lost, or mislaid, so that the same cannot be produced for inspection, such failure or neglect shall not excuse any party defendant in any suit brought under the preceding section from judgment for any penalty prescribed by said section.

WATER RIGHTS

Right of Way

SEC. 3138. Whenever any person or persons are engaged in bringing water into any portions of the mines, they shall have the right of way secured to them, and may pass over any claim, road, ditch, or other structure; *Provided*, the water be guarded so as not to interfere with prior rights.

SEC. 3158. (11.) All mining claims now located, or which may be hereafter located, shall be subject to the right of way of any ditch or flume for mining purposes, or of any tramway or pack-trail, whether now in use, or which may be hereafter laid out across any such location; *Provided, always*, that such right of way shall not be exercised against any location duly made and recorded, and not abandoned prior to the establishment of the ditch, flume, tramway, or pack-trail, without consent of the owner, except by condemnation, as in case of land taken for public highways. Parol consent to the location of any such easement, accompanied by the completion of the same over the claim, shall be sufficient without writings; *And Provided further*, that such ditch or flume shall be so constructed that the water from such ditch or flume shall not injure vested rights by flooding or otherwise.

Miners' Inch

SEC. 4643. (3.) . . . And water sold by the inch by any individual or corporation, shall be measured as follows, to wit: Every inch shall be considered equal to an inch square orifice under a five-inch pressure, and a five-inch pressure shall be from the top of the orifice of the box put into the banks of the ditch, to the surface of water; said boxes, or any slot or aperture through which such water may be measured, shall in all cases be six inches perpendicular inside measurement, except boxes delivering less than twelve inches, which may be square, with or without slides; all slides for the same shall move horizontally and not otherwise; and said box put into the banks of ditch shall have a descending grade from the water in ditch of not less than one-eighth of an inch to the foot.

TAILINGS

Miners Responsible

3144. SEC. 8. In no case shall any person or persons be allowed to flood the property of another person with water, or wash down the tailings of his or their sluice upon the claim or property of other persons, but it shall

be the duty of every miner to take care of his own tailings, upon his own property, or become responsible for all damages that may arise therefrom.

Hauling Quartz

Right of Way

Sec. 3145. (9.) Every miner shall have the right of way across any and all claims for the purpose of hauling quartz from his claim.

Mining Claims, Real Estate, Actions

Definitions

Sec. 456. (26.) The terms "land" and "real estate," as used in this chapter, shall be construed as coextensive in meaning with the terms "lands, tenements, hereditaments," and as embracing all mining claims and other claims, and chattels real. The term "deed" includes mortgages, leases, releases, and every conveyance or incumbrance under seal.

Transferable Interest

Sec. 3608. (3.) The owner of every claim or improvement, on every tract or parcel of land, has a transferable interest therein, which may be sold in execution or otherwise; and any sale of such improvement is a sufficient consideration to sustain a promise.

Claimant May Maintain Action

Sec. 3613. (8.) Any person settled upon any of the public lands belonging to the United States may maintain trespass *quare clausum fregit*, trespass ejectment, forcible entry and detainer, unlawful detainer and forcible detainer, for injuries done to the possession thereof.

City and Village Lots

Sec. 3617. (12.) Any person who may have a title to occupy any lot or lots within any city or village plot, or any lots or mining claim within any mining district in this State in virtue of a certificate, deed of gift or purchase from the original claimant or claimants, or their assigns, as well as all purchasers, under any decree or execution of any of the so-called provisional government courts, people's or miners' courts, of the lands situate within any city or village plot, or any lots, lands or mining claims situate within any mining district, together with the original claimant or claimants of said lots, lands or mining claims, shall be entitled to maintain the actions authorized by the eighth section of this chapter against any and all persons who shall enter upon and occupy said lots, lands or mining claims, or any of them: *Provided*, It shall be lawful for the citizens of mining districts to declare an abandonment of any creek, river, gulch, bank or mining claim a forfeiture of the rights of the claimants thereto; in which case the parties claimant shall not be enabled to maintain either of the actions mentioned in section eight of this chapter.

United States Title

Sec. 3618. (13.) Nothing in this chapter contained shall be construed to deny the right of the United States to dispose of any lands in this State, nor shall the fact that the title to any lots, lands, lodes or mining claims hath

not passed from the United States, be any bar to the recovery of the plaintiff in either of the actions specified in section eight of this chapter. As against the United States, and all persons holding any of said lands under the United States, or the laws thereof, this chapter shall be of no effect and void.

Annual Assessment

Affidavit of Expenditure

Sec. 2410 as amended April 20, 1889. Within six months after any set time or annual period allowed for the performance of labor or making improvements upon any lode claim or placer claim, the person on whose behalf such outlay was made, or some person for him, may make and record in the office of the Recorder of the county wherein such claim is situate an affidavit in substance as follows:

State of Colorado, } ss.
——— County. }

Before me, the subscriber, personally appeared , who, being duly sworn, saith that at least dollars' worth of work of improvements were performed or made upon (here describe claim or part of claim), situate in mining district, County of , State of Colorado, between the day of , A.D. , and the day of , A. D. . Such expenditure was made by or at the expense of , owners of said claim, for the purpose of complying with the law and holding said claim.

[Jurat.] [Signature.]

And such affidavit, when so recorded, shall be *prima facie* evidence of the performance of such labor, or the making of such improvements: *Provided*, That all affidavits of labor or improvements upon placer claims heretofore filed and recorded within the period prescribed in this section, or within the period prescribed in section twenty-four hundred and ten of the General Statutes, which shall contain in substance the requirements of the affidavit prescribed by this section, or said section twenty-four hundred and ten, shall be *prima facie* evidence of the performance of such labor or the making of such improvements; and the original thereof, or a certified copy of the record of the same, shall be received as evidence accordingly by the courts of this State, and this class of evidence shall be receivable, where relevant or material, in all cases, whether now pending or hereafter brought.

Liens on Mines

An act to amend Sec. 8 of an act entitled "An Act to secure liens to mechanics and others, and to repeal all laws in conflict therewith." Approved April 3d, 1893:

Workmen and Materials

Sec. 8. The provisions of this act shall apply to all persons who shall do work, or shall furnish material for the working, preservation or development of any mine, lode or mining claim or deposit, yielding metals or minerals of any kind, or for the working, preservation or development of any such mine, lode or deposit, in search of such metals or minerals; and to all persons who shall do work or furnish materials upon any shaft, tunnel, incline, adit,

drift or draining of any such mine, lode or deposit: *Provided*, That when two or more lodes, mines or deposits, owned or claimed by the same person or persons, shall be worked through a common shaft, tunnel, incline, adit, drift or other excavation, then all the mines, lodes or deposits so worked shall, for the purpose of this act, be deemed one mine: and *Provided further*, That this section shall not be deemed to apply to the owner or owners of any mine, lode, deposit, shaft, tunnel, incline, adit, drift or other excavation, who shall lease the same in small blocks of ground to one or more sets of lessees. [Immediate.]

Approved April 13, 1895. Session Laws of 1895, p. 202.

Mining Tunnels

Rights of Tunnel Owners

Sec. 3141*a*. Any person or company who has or hereafter may have a tunnel or cross-cut, the mouth of which is located upon his own ground or upon ground in his lawful occupation, shall have the right to drive and continue the same through and across any located or patented claim in front of the mouth of such tunnel, but not to follow or drive upon any vein belonging to the owner of such claim.

Rights of Owners of Intersecting Claims

Sec. 3141*b*. Such tunnel or cross-cut may be driven and worked for the purpose of drainage and for the purpose of reaching and working mining ground of the tunnel owner beyond the intersected claim. The owner or owners of any vein or any claim or claims so intersected, or his duly authorized agent, shall have the right to enter such tunnel upon application to the owner or owners of said tunnel without resorting to any process of law for the purpose of making a survey and inspecting such vein or veins as may be crossed within the boundary lines of such intersected claim, and if the owner or owners of such tunnel shall, by bulk heading, damming back or in any manner prevent the inspection or survey herein provided for, or if such owner or owners shall in any manner prevent the natural drainage of water from such intersected claim or claims without the consent of the owner or owners thereof, it shall work a forfeiture of all rights granted under section one of this act.

Owner of Ore — Damages

Sec. 3141*c*. If any ore, the property of the owner of the claim intersected or crossed, be extracted in driving such tunnel, it shall be the property of the owner of the vein from which it was taken, and the owner of the tunnel shall be liable for all actual damages or injury done to the owner of the claim crossed by his tunnel.

Burden of Proof

Sec. 3141*d*. In all actions between the tunnel owner and others involving the right to any vein discovered in such tunnel, the burden of proving that the vein so discovered is not the property of the adverse claimant in such action shall be on the tunnel owner.

Approved April 17, 1897. Session Laws, 1897, p. 181.

AN ACT GRANTING THE EXERCISE OF THE RIGHT OF EMINENT DOMAIN TO TUNNEL TRANSPORTATION COMPANIES, PIPE LINE TRANSMISSION COMPANIES, ELECTRIC POWER TRANSMISSION COMPANIES AND AERIAL TRAMWAY COMPANIES.

SEC. 1. Any foreign or domestic corporation, organized or chartered for the purpose, among other things, of carrying, transmitting, or delivering ore, mineral, or other property for hire by means of a tunnel or tunnels, shall have the right of way for the construction, operation and maintenance of any such tunnel or tunnels of sufficient size and dimensions for such purposes, through or over any patented or unpatented mines, mining claims, or other lands, without the consent of the owner thereof, if such right of way is necessary to reach the place to or from which it is proposed to carry such ore, mineral, or other property.

SEC. 2. Any foreign or domestic corporation organized or chartered for the purpose, among other things, of conducting or maintaining a pipe line for the transmission of power, water, air, or gas for hire to any mine or mining claim, or manufacturing, milling, mining, or public purpose, shall have the right of way for the construction, operation and maintenance of such pipe line or pipe lines for such purposes, through any lands, without the consent of the owner thereof, where such right of way is necessary for the purpose for which said pipe line shall be used.

SEC. 3. Any foreign or domestic corporation, organized or chartered for the purpose, among other things, of conducting and maintaining electric power transmission lines for the purpose of providing power or light by means of electricity for hire, shall have a right of way for the construction, operation and maintenance of such electric power transmission line through any patented or any unpatented mine or mining claim, or other land without the consent of the owner thereof, where such right of way is necessary for the purposes proposed.

SEC. 4. Any foreign or domestic corporation organized or chartered for the purposes, among other things, of conducting and maintaining for hire an aerial tramway for transporting ores, minerals, waste material or other property from any mine or mining claim by means of an aerial tramway, shall have the right of way for the construction, operation and maintenance for such tramway, and for all necessary towers and supports thereof over and across any intervening mining claim, land, or premises, without the consent of the owner thereof, where such right of way is necessary for the purposes proposed.

SEC. 5. Any such corporation or corporations, organized or chartered for any or all of the purposes herein before mentioned shall be deemed a common carrier or common carriers, and shall fix and charge only a reasonable and uniform rate to all persons who desire the use of any such tunnel, pipe line, electric power transmission line, or aerial tramway.

SEC. 6. In fixing the rate to be charged its patrons, as provided in Section 5, hereof, any such transportation tunnel company or aerial tramway company shall take into consideration the distance over which the material to be transported shall be carried.

SEC. 7. Any such corporation shall make due and just compensation for such right of way to the owners of the property through which it is proposed to construct, operate and maintain such tunnel, pipe line, electric transmission line, or aerial tramway, and when the parties cannot agree upon such right or way and the amount of compensation to be paid the owner of such property, the same shall be determined in manner as now provided by law for the exercise of the right of eminent domain.

SEC. 8. The owner of any vein, lode, mining claim or other property over which it is proposed to construct a tunnel as herein provided, shall have the right to all ore and mineral taken from such vein or lode at the intersection thereof with such tunnel.

SEC. 9. The owner or owners of such vein or lode so intersected shall have the right, at any reasonable time and from time to time, upon appliion to the superintendent or other managing officer of such tunnel corporation, to enter such tunnel with their surveyors and inspectors for the purpose of inspecting and making a survey of any such vein or lode, and the owners of such veins or lodes, and their employees shall have the right of ingress or egress through said tunnel at all reasonable times.

SEC. 10. Nothing in this act shall be so construed as to give such tunnel corporation the right to follow any vein or lode without the consent of the owner or owners, and when any vein or lode is encountered in driving any such tunnel such tunnel corporation shall only have the right of way to cross such vein or lode at such angle as may be suitable for the convenient operation of the tunnel.

SEC. 11. Any such tunnel corporation desiring to avail itself of the benefit of this act, shall file with the county clerk and recorder of the county or counties in which it is proposed to operate, a map or survey of its proposed tunnel, for which it desires a right of way, together with a statement showing the route of the proposed tunnel, and the patented or unpatented mining claims or other property through which it is proposed to construct the same, and may file supplementary maps and surveys upon any lawful change of its proposed line of tunnel.

SEC. 12. Any such pipe line corporation, desiring to avail itself of the benefit of this act, shall file with the county clerk and recorder of the county or counties in which it is proposed to operate, a map or survey of its proposed pipe line, for which it desires a right of way, together with a statement showing the route of the proposed pipe line, and the patented or unpatented mining claims or other property through which it is proposed to construct the same, and may file supplementary maps and surveys upon any lawful change of its proposed line.

SEC. 13. Any such electric power transmission corporation, desiring to avail itself of the benefit of this act, shall file with the county clerk and recorder of the county or counties in which it is proposed to operate, a map or survey of its proposed line, for which it desires a right of way, together with a statement showing the route of the proposed line, and the patented or unpatented mining claims or other property through which it is proposed to construct the same, and may file supplementary maps and surveys upon any lawful change of its proposed line.

SEC. 14. Any such aerial tramway corporation, desiring to avail itself of the benefit of this act, shall file with the county clerk and recorder of the county or counties in which it is proposed to operate, a map or survey of its proposed route, for which it desires a right of way, together with a statement showing the route of the proposed tramway, and the patented or unpatented mining claims or other property, over or across which it is proposed to construct the same, and may file supplementary maps and surveys upon any lawful change of its proposed line.

SEC. 15. Any such tunnel or aerial tramway corporation or corporations shall, subject to its or their reasonable regulations, accept from the owners of mining properties, all ore and waste, and other materials loaded in cars and delivered to it or them along its or their line of tunnel or aerial tramways for transportation, and afford facilities for the handling of the same at such place, upon payment to it or them, at the rates established and fixed by such tunnel or aerial tramway corporation, or corporations.

SEC. 16. Any such pipe line corporation, or electric power transmission corporation or corporations shall, subject to its or their reasonable regulations, furnish to the owners of mining properties power from said pipe lines or electric power transmission lines upon payment to it or them at the rates established and fixed by such corporation or corporations.

Approved April 9, 1907.

IDAHO

LOCATING CLAIMS

Width of Claims

SEC. 1. That section 3100 of the Revised Statutes of Idaho be amended to read as follows:

SEC. 3100. Mining claims hereafter located upon veins or lodes of quartz, or other rock in place bearing any of the metals or other valuable deposits mentioned in section 2320 of the Revised Statutes of the United States, may extend to three hundred feet on each side of the middle of the vein or lode: *Provided*, That when the locators have set stakes, posts or monuments described in section 2 hereof, to indicate the line of the vein, ledge or lode, such stakes, posts or monuments must be taken for the purpose of such location, to mark correctly the line thereof, and such line must not afterwards be changed so as to affect rights acquired or interfere with any locations made subsequent thereto.

SEC. 2. Section 3101 of the Revised Statutes of Idaho be amended to read as follows:

Location Notices. — Boundaries

SEC. 3101. The locator, at the time of making the discovery of such vein or lode, must erect a monument at such place of discovery, upon which he must place his name, the name of the claim, the date of discovery and distance claimed along the vein each way from such monument. Within ten days from the date of discovery, he must mark the boundaries of his claim by establishing at each corner thereof, and at any angle in the side lines, a monument, marked with the name of the claim and the corner or angle it represents; also

at the time of so marking his boundaries, he must post at his discovery monument his notice of location in which must be stated:

First. The name of the locator.

Second. The name of the claim.

Third. The date of discovery.

Fourth. The direction and distance claimed along the ledge from the discovery.

Fifth. The distance claimed on each side of the middle of the ledge.

Sixth. The distance and direction from the discovery monument, to such natural object or permanent monument, if any such there be, as will fix and describe, in the notice itself, the location of the claim; and

Seventh. The name of the mining district, county and state.

When from any cause a monument cannot be safely planted at the true corner or angle, it may be placed as near thereto as practicable, and so marked as to indicate the place of such corner or angle.

Monuments may be made of any such material or form as will readily give notice, and when of posts or trees they must be hewn and marked upon the side facing toward the discovery, and must be at least four inches square or in diameter. Monuments must be at least four feet high above the ground, and trees must be so hewn as to readily attract attention. At the time the locator so marks the boundaries of his claim, he may do so in any direction that will not interfere with rights or claims which existed prior to his discovery.

Must Sink ten-foot Shaft

SEC. 3. Within sixty days after such location, the locator or his assigns must sink a shaft upon the lode to the depth of at least ten feet from the lowest part of the rim of such shaft at the surface, and of not less than sixteen square feet area. Any excavation which shall cut such vein ten feet from the lowest part of the rim of such shaft and which shall measure one hundred and sixty cubic feet in extent shall be considered a compliance with this provision. Any located claim upon which work has been done in compliance with the above requirements is not, unless abandoned, subject to relocation for a period of ninety days from and after the date of location.

Recording Location Notice

SEC. 4. Within ninety days after the location of the claim the locator or his assigns must file for record in the office of the county recorder of the county or of the deputy recorder, or the mining district in which the claim is situated, a substantial copy of his notice of location.

Amending Certificate

SEC. 2566. If at any time the locator of any mining claim heretofore or hereafter located, or his assigns, shall apprehend that his original certificate was defective, erroneous, or that the requirements of the law had not been complied with before filing, or shall be desirous of changing the surface boundaries, or of taking any part of an overlapping claim which has been abandoned, or in case the original certificate was made prior to the passage of this law, and he shall be desirous of securing the benefits of this act, such locator or his assigns may file an additional certificate subject to the conditions of this act

and to contain all that this act requires an original certificate to contain: *Provided*, That such amended location does not interfere with the existing rights of others at the time when such amendment is made.

Affidavit of Labor

SEC. 2565. Within sixty days after any time set or period allowed for the performance of labor, or making improvements upon any lode, or placer claim, the person in whose behalf such work or improvement is performed, or some person for him must make and record an affidavit in substance as follows:

County of , State of Idaho, ss.

Before me the subscribed, personally appeared who being first duly sworn says that at least dollars worth of work for improvements were performed or made upon claim, situate in mining district, county of State of Idaho: That such expenditure was made by, for, or at the expense of owner of said claim, for the purpose of holding said claim, and all stakes, monuments or trees marking boundaries of said claims are in proper place and positions.

_____

Subscribed and sworn to before me this day of 189—.

The fee for administering the oath and recording the foregoing affidavit, when taken before the county recorder or deputy mining recorder, shall be fifty cents; the fee for recording the same when the oath is taken before any other officer authorized to administer oaths shall be fifty cents. Such affidavit, or a certified copy thereof in case the original is lost, shall be prima facie evidence of the performance of such labor. The failure to file such affidavit shall be considered prima facie evidence that such labor has not been done.

Locating Abandoned Claims

SEC. 2560. The location of abandoned claims shall be done in the same manner as if the location were of a new claim; but the locator may, instead of sinking a new discovery shaft, sink the original discovery shaft ten feet deeper than it was at the time of his location, or he may drive the open cut, or tunnel ten feet further along the course of the lead, lode or vein, and must erect new posts or monuments.

One Location in One Notice

SEC. 2561. No location notice shall claim more than one location, whether the location is made by one or several locators, and if it purport to claim more than one location it is absolutely void.

Deputy Recorders

SEC. 2567. For the convenience of prospectors and locators, the county recorders of the several counties must appoint a deputy at any place where he may deem it necessary, and at all places more than twenty miles distant from an existing office whenever ten or more mining locators interested, petition for the appointment of a deputy. Upon failure of any recorder to appoint a deputy for ten days after the petition in writing has been presented,

to him, the resident miners in such district may appoint temporarily, one of their number to act as the recorder for the district, whose record shall be as valid as if made by the deputy, and must be entered by the recorder as hereinafter required: *Provided*, That whenever at any time afterwards the recorder has appointed a deputy for such district or place, the authority of the person elected by the resident miners ceases.

Security for Damage to Surface by Mining

SEC. 2571. When the right to mine is in any case separate from the ownership or right of occupancy of the surface ground, the owners or rightful occupants of the surface ground may demand satisfactory security from the miners, and if it be refused or not given, may enjoin such miners from working such ground until such security is given. The court granting the writ of injunction shall fix the amount and nature of the security.

Placer Claims

SEC. 2562. Placer claims, as mentioned in section 2329 of the Revised Statutes of the United States, may be located for the purpose of mining deposits and precious stones after the discovery of such deposits.

Location Notice, Marking Boundaries and Work on Placer Claims

SEC. 2563. The locator of any placer mining claim located for the purpose of mining placer deposits or precious stones must, at the time of making the location, place a substantial post or monument as is required in the location of quartz claims at each corner of the location, and must also post on one of the same a notice of location containing the date of the location, the name of the locator, the name and dimensions of the claim, the mining district (if any) and county in which the same is situated; and must also give the distance and direction from said post or monument to such natural object or permanent monument, if any such there be, as will fix and describe in the notice itself, the location of the claim. Within fifteen days after making the location, the locator must make an excavation upon the claim of not less than one hundred cubic feet, for the purpose of prospecting the same. Within thirty days after the location, the locator must file for record in the office of the county recorder of the county, or of the deputy recorder of the mining district in which the claim is situated, a substantial copy of his copy of notice of location, to which must be attached an affidavit such as is required in the case of quartz claims.

Affidavit to Location Notice

SEC. 2564. At or before the time of presenting a location notice for record, whether it be for a quartz or placer claim, one of the locators named in the same must make and subscribe an affidavit in writing, on or attached to the notice, substantially in the following form, to wit:

State of Idaho, County of , ss.

I, , do solemnly swear that I am a citizen of the United States of America (or have declared my intentions to become such), and that I am acquainted with the mining ground described in this notice of location, and herewith called the ledge, lode or claim; that the

ground and claim therein described or any part thereof has not, to the best of my knowledge and belief, been located according to the laws of the United States and of this state, or if so located, that the same has been abandoned or forfeited by the reason of the failure of such former locators to comply in respect thereto with the requirements of said laws, and (in case of quartz claims) that I have opened new ground to the extent or depth of ten feet, as required by the laws of Idaho.

Signature _____

Subscribed and sworn to before me this day of A.D. 19—.

Signature _____

Record of Location Notice

SEC. 3105. The location notice herein required to be recorded must be recorded by the deputy appointed for the district, or the person appointed for that purpose as above provided (when the legal fee therefor is tendered) in a book to be kept for that purpose. Said book must be indexed, with the names of all the locators arranged in alphabetical order, according to the family or surname of each. The fee to be tendered for making such record, administering the oath to the locator and certifying the same, for indexing the names appearing on the notice, and to include recording the notice by the recorder as hereinafter required, and the indexing by said recorder, is two dollars, which fee must be equally divided between the recorder and the deputy or the person acting under an election as hereinbefore provided, and no other additional sum of money must be demanded or received by either of them for any services connected with the recording of any location notice made pursuant to the requirements of this chapter.

MINING PARTNERSHIP

SEC. 2774. A mining partnership exists when two or more persons who own or acquire a mining claim for the purpose of working it and extracting the mineral therefrom, actually engage in working the same.

SEC. 2775. An express agreement to become partners or to share the profits and losses of mining is not necessary to the formation or existence of a mining partnership. The relation arises from the ownership of shares or interests in the mine and working the same for the purpose of extracting the minerals therefrom.

SEC. 2776. A member of a mining partnership shares in the profits and losses thereof in the proportion which the interest or share he owns in the mine bears to the whole partnership capital or whole number of shares.

SEC. 2777. Each member of a mining partnership has a lien on the partnership property for the debts due the creditors thereof, and for money advanced by him for its use. A lien exists in favor of the creditors, notwithstanding there is an agreement among the partners that it must not.

SEC. 2778. The mining ground owned and worked by partners in mining, whether purchased with partnership funds or not, is partnership property.

SEC. 2779. One of the partners in a mining partnership may convey his interest in the mine and business without dissolving the partnership. The

purchaser, from the date of his purchase, becomes a member of the partnership.

SEC. 2780. A purchaser of an interest in the mining ground of a mining partnership takes it subject to the liens existing in favor of the partners for debts due all creditors thereof, or advances made for the benefit of his partnership, unless he purchased in good faith, for a valuable consideration, without notice of such lien.

SEC. 2781. A purchaser of the interest of a partner in a mine when the partnership is engaged in working it, takes with notice of all liens resulting from the relation of the partners to each other and to the creditors of the partnership.

SEC. 2782. No member of a mining partnership or other agent or manager thereof can, by a contract in writing, bind the partnership except by express authority derived from the members thereof.

SEC. 2783. The decision of the members owning a majority of the shares or interests in a mining partnership binds it in the conduct of its business.

RIGHT OF WAY ACROSS CLAIM

SEC. 2572. The owner, locator, or occupant of a mining claim, whether patented under the laws of the United States or held by location or possession, may have and acquire a right-of-way for ingress and egress, when necessary in working such mining claim, over and across the lands or mining claims of others, whether patented or otherwise.

SEC. 2573. When any mine or mining claim is so situated, that for the more convenient enjoyment of the same, a road, railroad or tramway therefrom, or a ditch or canal to convey water thereto, or a ditch, flume, cut or tunnel to drain or convey the waters or tailings therefrom, or a tunnel or shaft may be necessary for the better working thereof, which road, railroad, tramway, ditch, canal, flume, cut, shaft or tunnel, may require the use or occupancy of lands or mining grounds, owned, occupied or possessed by others than the person or persons or body corporate, requiring an easement for any of the purposes described, the owner, claimant or occupant of the mine or mining claim first above mentioned, is entitled to a right-of-way, entry and possession for all the uses and privileges for such road, railroad, tramway, ditch, canal, flume, cut, shaft or tunnel, in, upon, through and across such other lands or mining claims.

SEC. 3861. When the owner, claimant, or occupant of any mine or mining claim desires to work the same, and it is necessary to enable him to do so successfully and conveniently, that he have a right-of-way for any of the purposes mentioned in sections 2572 and 2573 above, if such right-of-way cannot be acquired by agreement with the claimant or owner of the lands or claims over, under, through, across or upon which he seeks to acquire such right-of-way, he may commence an action in the District Court in and for the county in which such right-of-way, or some part thereof, is situated, by filing a verified complaint containing a particular description of the character and extent of the right sought, a description of the mine or claim of the plaintiff, and of the mine or claim and lands to be affected by such right-of-way or privilege, with the name of the occupant or owner thereof. He may also set

forth any tender of compensation that he may have made, and demand the relief sought.

SEC. 3862. Upon filing of such complaint the clerk must issue a summons as provided in other civil actions, and the same must be served in the manner prescribed by law for service in ordinary actions.

SEC. 3863. At any time after the service of the summons the plaintiff may upon ten days' notice to the defendant apply to the District Court or the Judge thereof for the appointment of commissioners to assess the damages resulting from the grant of such right-of-way. If upon the hearing of such motion, and the affidavit and proofs offered by the respective parties, the Judge shall be of the opinion that the plaintiff has made a prima facie case entitling him to the relief demanded in the complaint, or any part thereof, he shall appoint three commissioners, who must be disinterested persons, residents of the county, to assess the damages resulting to the claims, mines or lands of defendant. But if such commissioners are not applied for and appointed, or their award is not approved by the Judge or Court, or if an appeal is taken from their award as hereinafter provided, the action shall be tried and determined by the Court, and the provisions of the Code of Civil Procedure applicable thereto shall govern the proceedings therein as in other civil actions; either party shall be entitled to a jury trial, and may move for a new trial and appeal as in other cases.

SEC. 3864. The commissioners so appointed must be sworn to faithfully and impartially discharge their duties, and must proceed without unreasonable delay to examine the premises and assess the damages resulting from such right or privilege prayed for, and report the amount of the same to the Judge appointing them, and if such right-of-way affects the property of more than one person or company, such report must contain an assessment of damages to each company or person.

SEC. 3865. For good cause shown, the Judge may set aside the report of such commissioners and appoint three other commissioners, whose duty shall be the same as above mentioned.

SEC. 3866. Upon the payment of the sum assessed as damages as aforesaid, to the persons to whom it is awarded, or a tender thereof to them, then the person petitioning as aforesaid, is entitled to the right-of-way prayed for in his petition, and may immediately proceed to occupy the same and erect thereon such works and structures, and make therein such excavations as may be necessary to the use and enjoyment of the right-of-way so awarded.

SEC. 3867. Appeals from the assessment of damages made by the commissioners may be made and prosecuted in the proper district court by any party interested at any time within ten days after the filing of the report of the commissioners. A written notice of such appeal must be served upon the appellee in the same manner as summons are served in civil actions. The appellant must file with the Clerk of the Court to which the appeal is made, a bond with sureties to be approved by the Clerk in the amount of the assessment appealed from in favor of the appellee, conditioned that the appellant will pay any costs that may be awarded to the appellee, and abide any judgment that may be rendered in the cause.

SEC. 3868. An appeal brings before the District Court the necessity of

the right-of-way or easement for the successful and convenient working of the mining claim and the amount of damages; and upon such appeal the case must be tried anew, and either party is entitled to a jury.

SEC. 3869. The prosecution of an appeal from the award of the Commissioners or from the judgment of the District Court does not hinder, delay or prevent the plaintiff from exercising all the rights and privileges granted by the award or judgment, if he deposit with the Clerk of the District Court the full amount of the damages awarded or adjudged the defendant, and execute and deliver to the Clerk a bond with sufficient sureties to be approved by the Clerk, in an amount to be fixed by the Judge of the District Court, conditioned to pay to the defendant any additional amount, over and above the amount so deposited, that defendant may recover, and all costs to which he may be entitled under the provisions of this chapter. At any time after such deposit and before the final determination of the action the defendant may, upon demand, receive from the Clerk the amount so deposited, but his acceptance of the same, or any part thereof, shall bar any further prosecution of the appeal and shall be deemed an acquiescence and consent to the award and judgment, and the defendant shall not be entitled to any costs subsequent to the deposit.

SEC. 3870. If the defendant recover judgment against the necessity of the easement, or for fifty dollars more damage than the plaintiff has tendered to him as provided in the next section, or for fifty dollars more damages than the commissioners or judgment of the district awarded him, he shall recover the costs of the appeal, otherwise he must pay all such costs.

SEC. 3871. The costs and expenses of proceedings under the provisions of this chapter, except as herein otherwise provided, must be paid by the party making the application: *Provided*, That if the applicant before the commencement of such proceedings has tendered to the parties owning or occupying the lands or mining claims, a sum equal to or more than the amount of damages recovered, all of the costs and expenses must be paid by the party or parties owning the lands or claims affected by such right-of-way, and who appeared and resisted the claim of the applicants thereto.

MINING TUNNELS

AN ACT CONCERNING MINING TUNNELS

Right to Pass through Mining Claim

SECTION 2575. Any person or company who has or may hereafter have a tunnel or cross-cut, the mouth of which is located upon his own ground or upon ground in his lawful occupation, shall have the right to drive and continue the same through and across any located or patented claim in front of the mouth of such tunnel, but not to follow or drive upon any vein belonging to the owner of such claim.

Purpose. — Rights of Owner of Claim Intersected

SEC. 2576. Each tunnel or cross-cut may be driven and worked for the purpose of drainage and for the purpose of reaching and working mining ground of the tunnel owner beyond the intersected claim. The owner or owners of any vein or any claim or claims so intersected, or his duly authorized agent,

shall have the right to enter such tunnel upon application to the owner or owners or person in charge of said tunnel, without resorting to any process of law for the purpose of making a survey and inspecting such vein or veins as may be crossed within the boundary lines of such intersected claim, and if the owner or owners of such tunnel shall, by bulkheading, damming back or in any manner prevent the inspection or survey herein provided for, or if such owner or owners shall in any manner prevent the natural drainage of water from such intersected claim without the consent of the owner or owners thereof, it shall work a forfeiture of all rights granted under section one of this act.

Ore Extracted

SEC. 2577. If any ore, the property of the owner of the claim intersected or crossed, be extracted in driving such tunnel, it shall be the property of the owner of the vein from which it was taken, and the owner of the tunnel shall be liable for all actual damages or injury done to the owner of the claim crossed by his tunnel.

Burden of Proof

SEC. 2578. In all actions between the tunnel owner and others involving the right to any vein discovered in such tunnel, the burden of proving that the vein so discovered is not the property of the adverse claimant in such action shall be on the tunnel owner.

RECORDING MINING CONTRACTS

AN ACT PROVIDING FOR THE RECORDING OF PROSPECTING AND MINING CONTRACTS

SECTION 2784. Written contracts relating to prospecting or mining, or to the formation of copartnership for that purpose, when signed by the parties thereto and indorsed by at least one witness, may be recorded in the office of the County Recorder of the County wherein it is proposed to prosecute the business of said copartnership, or where the property affected by such contract is situated. Such record shall be constructive notice to all persons of the matters contained in such contract or copartnership agreement.

REGARDING ALIENS

AN ACT TO AUTHORIZE ALIENS TO TAKE, HOLD AND DISPOSE OF MINING PROPERTY

SECTION 2555. Any person, whether citizen or alien (except as hereinafter provided) natural or artificial, may take, hold and dispose of mining claims and mining property, real or personal, tunnel rights, mill sites, quartz mills and reduction works used or necessary or proper for the reduction of ores, and water rights used for mining or milling purposes, and any other lands or property necessary for the working of mines or the reduction of the products thereof: *Provided*, That Chinese, or persons of Mongolian descent not born in the United States, are not permitted to acquire title to land, or any real property under the provisions of this title.

AN ACT TO PROHIBIT THE MAKING OR PUBLISHING OF FALSE OR EXAGGERATED STATEMENTS OR PUBLICATIONS OF OR CONCERNING THE AFFAIRS, PECUNIARY CONDITION OR PROPERTY OF ANY CORPORATION, JOINT STOCK ASSOCIATION, CO-PARTNERSHIP OR INDIVIDUAL, WHICH SAID STATEMENTS OR PUBLICATIONS ARE INTENDED TO GIVE, OR SHALL HAVE A TENDENCY TO GIVE, A LESS OR GREATER APPARENT VALUE TO THE SHARES, BONDS OR PROPERTY, OR ANY PART THEREOF OF SAID CORPORATION, JOINT STOCK ASSOCIATION, CO-PARTNERSHIP OR INDIVIDUAL, THAN THE SAID SHARES, BONDS OR PROPERTY SHALL REALLY AND IN FACT POSSESS, AND PROVIDING A PENALTY THEREFOR.

SEC. 1. Any person who knowingly makes or publishes in any way whatever, or permits to be so made or published, any book, prospectus, notice, report, statement, exhibit or other publication of or concerning the affairs, financial condition or property of any corporation, joint-stock association, co-partnership or individual, which said book, prospectus, notice, report, statement, exhibit or other publication, shall contain any statement which is false or wilfully exaggerated, or which is intended to give, or which shall have a tendency to give, a less or greater apparent value to the shares, bonds or property of said corporation, joint-stock association, co-partnership or individual, or any part of said shares, bonds or property, than said shares, bonds or property or any part thereof, shall really and in fact possess, shall be deemed guilty of a felony, and upon conviction thereof shall be imprisoned for not more than ten years or fined not more than ten thousand dollars, or shall suffer both said fine and imprisonment.

SEC. 2. All acts and parts of acts which are in conflict with the provisions of this act, are hereby repealed.

SEC. 3. Whereas an emergency exists, therefore, this act shall take effect from and after its passage and approval.

Approved on the 19th day of February, 1907.

RECORDING LOCATION NOTICES

AN ACT TO PROVIDE FOR THE RECORDING OF ALL MINING LOCATION NOTICES WITH THE DEPUTY MINING RECORDER AND PROVIDING FOR HIS COMPENSATION, REQUIRING THE COUNTY RECORDER TO TRANSMIT TO THE DEPUTY MINING RECORDER CERTAIN LOCATION NOTICES.

SECTION 1. It shall be the duty of the County Recorder of the several counties of this State, within fourteen days after receiving them, to transmit to the Deputy Mining Recorder of the district wherein the claims located are situated, all location notices, both quartz and placer, which shall not have been already recorded in the office of the Deputy Mining Recorder.

It shall be the duty of such Deputy Mining Recorder to record in his records all such notices received by him, and he shall receive as compensation therefor from the Clerk sending them one-half the fee authorized by law to be charged for the recording of mining claims. After recording such notices the Deputy Mining Recorder shall return the same to the County Recorder.

Approved on the 11th day of March, 1903.

MONTANA

AN ACT GOVERNING THE MANNER OF LOCATING, RECORDING AND HOLDING POSSESSION OF MINING CLAIMS UPON THE PUBLIC DOMAIN OF THE UNITED STATES WITHIN THE STATE OF MONTANA.

Mineral Location. — Notice. — Marking Claim. — Discovery Shaft. Recording Location Notice. — Verification. — Agent

SEC. 1. Any person who discovers, upon the public domain of the United States, within the State of Montana, a vein, lode, or ledge of rock in place, bearing gold, silver, cinnabar, lead, tin, copper or other valuable deposits, or a placer deposit of gold, or other deposit of minerals having a commercial value which is subject to entry and patent under the mining laws of the United States, may, if qualified by the laws of the United States, locate a mining claim upon such vein, lode, ledge or deposit, in the following manner, viz:

I. He shall post, conspicuously, at the point of discovery a written or printed notice of location, containing the name of the claim, the name of the locator (or locators, if there be more than one,) the date of the location, which shall be the data of posting such notice, and the approximate dimensions of area of the claim intended to be appropriated.

II. Within thirty days after posting the notice of location, he shall distinctly mark the location on the ground so that its boundaries can be readily traced. It shall be prima facie evidence that the location is properly marked if the boundaries are defined by a monument at each corner or angle of the claim, consisting of any one of the following kinds: (1) A tree at least eight inches in diameter, and blazed on four sides. (2) A post at least four inches square by four feet six inches in length, set one foot in the ground, unless solid rock should occur at a less depth, in which case the post should be set upon such rock, and surrounded in all cases by a mound of earth or stone at least four feet in diameter by two feet in height. A squared stump, the equivalent of a post and mound. (3) A stone at least six inches square by eighteen inches in length, set two-thirds of its length in the ground, with a mound of earth or stone along side at least four feet in diameter by two feet in height, or (4) a boulder at least three feet above the natural surface of the ground on the upper side.

Where other monuments, or monuments of lesser dimensions than those above described, are used, it shall be a question for the jury, or for the court where the action is tried without a jury, as to whether the location has been marked upon the ground so that its boundaries can be readily traced. Whatever monument is used, it must be marked with the name of the claim and the designation of the corner, either by number or cardinal point.

III. Within sixty days after posting such notice, he shall sink a shaft upon the vein, lode or deposit, at or near the point of discovery, to be known as the discovery shaft. Such shaft shall be sunk to the depth of at least ten feet, vertically, below the lowest part of the rim of such shaft at the surface, or deeper if necessary to disclose the vein or deposit located, and the cubical contents of such shaft shall be not less than one hundred and fifty cubic feet; provided, that any cut or tunnel which discloses the vein, lode or deposit

located at a vertical depth of at least ten feet below the natural surface of the ground and which constitutes at least one hundred and fifty cubic feet of excavation, shall be deemed the equivalent of such shaft, and, provided also, that, where the vein, lode or deposit located is disclosed at a less vertical depth than ten feet, any deficiency in the depth of the discovery shaft, cut or tunnel may be compensated for by any horizontal extension of such working, or by any excavation done, elsewhere upon the claim, equalling, in cubical contents, the cubical extent of such deficiency; but in every case at least 75 cubic feet of excavation shall be made at the point of discovery.

SEC. 2. Within sixty days after posting the notice of location and for the purpose of constituting constructive notice of the location, the locator shall record his location in the office of the county clerk of the county in which such mining claim is situated. Such record shall consist of a certificate of location containing:

I. The name of the lode or claim.

II. The name of the locator or locators, if there be more than one.

III. The date of location, and such a description of said claim, with reference to some natural object or permanent monument, as will identify the claim.

IV. In the case of a lode claim, the direction and distance claimed along the course of the vein each way from the discovery shaft, cut or tunnel, with the width claimed on each side of the center of the vein.

V. In the case of a placer claim, the dimensions or area of the claim, and the location theron, of the discovery shaft, cut or tunnel.

VI. The locator and claimant, at his option, may also set forth, in such certificate of location, a description of the discovery work, the corner monuments, and the markings thereon, and any other facts showing a compliance with the provisions of this law.

Such certificate of location must be verified, before some officer authorized to administer oaths, by the locator, or one of the locators, if there be more than one, or by an authorized Agent. In the case of a corporation, the verification may be made by any officer thereof, or by an authorized agent. When the verification is made by an Agent, the fact of the agency shall be stated in the affidavit.

A certificate of location so verified, or a certified copy thereof, is prima facie evidence of all facts properly recited therein.

Millsite Claims

SEC. 3. Millsite claims may be located and recorded in the same manner as other claims, except that no discovery or discovery work is required. Where a millsite claim is appurtenant to a mining claim, the certificate of location of such millsite claim shall describe, by appropriate reference, the mining claim to which it is appurtenant.

Relocation of Abandoned or Forfeited Claim

SEC. 4. The re-locator of an abandoned or forfeited mining claim may adopt as his discovery any shaft or other working, existing upon such claim at the date of the relocation, in which the vein, lode or deposit is disclosed, but, in such shaft or other working, he shall perform the same discovery work as is required in the case of an original location.

Resumption not to affect Rights of Relocator

SEC. 5. The rights of a re-locator of any abandoned or forfeited mining claim, hereafter re-located, shall date from the posting of his notice of location thereon, and, while he is duly performing the acts required by law to perfect his location, his rights shall not be affected by any re-entry or resumption of work by the former locator or claimant.

Amendment of Location

SEC. 6. A locator or claimant may, at any time, amend his location and make any change in the boundaries which does not involve a change in the point of discovery as shown by the discovery shaft by marking the location as amended upon the ground, and filing an amended certificate of location conforming to the requirements of an original certificate of location. A defect in a recorded certificate of location may be cured by filing an amended certificate.

Relocating Own Claim

SEC. 7. A locator or claimant may, at any time, re-locate his own claim for any purpose, except to avoid the performance of annual labor thereof, and, by such re-location, may change the boundaries of his claim, or the point of discovery, or both, but such relocation must comply in all respects, with the requirements of this law as to an original location.

Relocation not a Waiver

SEC. 8. Where a locator or claimant amends or re-locates his own claim, such amendment or re-location shall not be construed as a waiver of any right or title acquired by him by virtue of the previous location or record thereof, except as to such portions of the previous location as may be omitted from the boundaries of the claim as amended or re-located.

As to the portion of ground included both in the original location and the location as amended or relocated, he may rely either upon the original location or the location as amended or re-located, or upon both. Provided, that nothing herein contained shall be construed as permitting the locator or claimant to hold a tract which does not include a valid discovery.

Rights of Third Persons

SEC. 9. No amendment or re-location of a mining claim by the locator or claimant therof shall interfere with the right of any third person existing at the time of such amendment or re-location.

Defective Locations, etc.

SEC. 10. All mining locations, made and recorded under the laws of this State, heretofore in force, that in any respect have failed to conform to the requirements of such laws, shall, nevertheless, in the absence of the rights of third persons accruing prior to the passage of this Act, be valid if the making and recording of such locations conform to the requirements of this Act.

Time not Mandatory

SEC. 11. The period of time, prescribed by this law for the performance

of any act, shall not be deemed mandatory, where the act is performed before the rights of third persons have intervened, and no defect in the posted notice or recorded certificate shall be deemed material, except as against one who has located the same ground, or some portion thereof, in good faith and without notice.

Notice to an agent who makes a location in behalf of another, shall be deemed notice to his principal, and notice to one of several co-claimants shall be deemed notice to all.

Effect of Patent

SEC. 12. The issuance of a United States Patent for a mining claim shall be deemed conclusive that the requirements of the laws of this state relative to the location and record of such mining claim, have been duly complied with; provided, however, that where questions of priority are involved the date of the location shall be an issuable fact where it is claimed to have been prior to the date of the record of the location.

SEC. 13. All Acts and parts of Acts in conflict herewith, including Sections 3610 and 3615 of the Political Code, and Sections 3611 and 3612 of the said Code as amended by an Act of the Seventh Legislative Assembly, entitled:

AN ACT to amend Sections 3611 and 3612 of the Political Code of Montana, relating to the location of mining claims and the making and filing of declaratory statements, approved March 15, 1901, are hereby repealed.

SEC. 14. This Act shall be in force and effect from and after its passage and approval.

Approved February 18, 1907.

Prior Records

SEC. 3613. All placer mining locations or locations of valuable mineral deposits, which have heretofore been recorded in the office of the county clerk or recorder, have the same force and effect as though such records had been authorized by law, except in cases where the rights of third persons had been acquired before the passage of this Code; and such record is entitled to be admitted in evidence in any court.

Affidavit — Annual Assessment

SEC. 3614. The owner of a lode or placer claim who performs or causes to be performed the annual work or makes the improvements required by the laws of the United States in order to prevent the forfeiture of the claim, may, within twenty days after the annual work, file in the office of the county clerk of the county in which such claim is situated an affidavit of his own, or an affidavit of the person who performs such work or made the improvements, showing: 1. The name of the mining claim and where situated. 2. The number of days' work done, and the character and value of the improvements placed thereon. 3. The dates of performing such work, and of making the improvements. 4. At whose instance the work was done or the improvements made. 5. The actual amount paid for work and improvements, by whom paid when the same was not done by the owner. Such affidavits, or a certified copy thereof, are prima facie evidence of the facts therein stated.

Declaratory Statement — Official Survey

SEC. 3616. Where a locator or owner of a mining claim has the boundaries and corners of his claim established by a United States deputy mineral surveyor, and his claim connected with a corner of the public or minor surveys or an established initial point, and incorporates into the declaratory statement the field-notes of such survey, and attaches to and files with such declaratory statement a certificate by the surveyor setting forth: 1. That said survey was actually made by him, giving the date thereof. 2. The name of the claim surveyed and the locators thereof. 3. That the description incorporated in the declaratory statement is sufficient to identify the claim. Such survey and certificate become a part of the declaratory statement, and such declaratory statement is prima facie evidence of the facts therein contained.

Political Code, 1895, p. 304. Amended March 15, 1901.

Miner's Right of Way

SEC. 3630. The owner of a mining claim held under the laws of the United States by patent or otherwise, or under the local laws and customs of the State, has a right of way over and across the land or mining claim, patented or otherwise, of another, as prescribed in this chapter.

Road — Ditch — Cut — Flume — Shaft — Tunnel

SEC. 3631. Whenever a mine or mining claim is so situated that it cannot be conveniently worked without a road thereto, or a ditch to convey water thereto, or a ditch or a cut to convey the water therefrom, or without a flume to carry water and tailings therefrom, or without a shaft or tunnel thereto, which road, ditch, cut, flume, shaft, or tunnel must necessarily pass over, under, through, or across any lands or mining claims owned or occupied by another, such owner is entitled to a right of way for said road, ditch, cut, flume, shaft or tunnel over, under, through and across the lands or mining claims belonging to another, upon compliance with the provisions of this Chapter.

For proceedings in court to secure right of way, see sections 3632 to 3641, Political Code, 1895, p. 307.

Statute of Limitations

SEC. 494. No action for the recovery of mining claims (lode claims excepted), or for the recovery of possession thereof, shall be maintained, unless it appears that the plaintiff or his assigns was seized or possessed of such mining claims within one year before the commencement of such action. [Code of Civil Procedure, 1895, p. 785.]

Customs as Proof

SEC. 1321. In actions respecting mining claims, proof must be admitted of the customs, usages, or regulations established and in force at the bar or diggings embracing such claim, and such customs, usages, or regulations, when not in conflict with the laws of this State or the United States, must govern the decision of the action.

Patent Application — Possession

SEC. 1322. In an action brought to determine the respective rights of

claimants to the possession of a mining claim or quartz lode, under the provisions of the Acts of Congress of the United States, it is immaterial which party is in possession, and it is sufficient to confer jurisdiction upon the court if it appears from the pleadings that the application for a patent has been made, and an adverse claim thereto filed and allowed in the proper land office; and the verdict or decision must find which party is entitled to the possession of the premises in dispute.

Code of Civil Procedure, 1895, p. 853.

Standard of Measurement for Water

Water Measure

Sec. 1. Hereafter a cubic foot of water (7.48 gallons) per second of time shall be the legal standard for the measurement of water in this State.

Water Rights

Sec. 2. Where water rights expressed in miner's inches have been granted one hundred miner's inches shall be considered equivalent to a flow of two and one-half cubic feet (18.7) gallons per second; two hundred miner's inches shall be considered equivalent to a flow of five cubic feet (37.4 gallons) per second, and this proportion shall be observed in determining the equivalent flow represented by any number of miner's inches.

Prior Decree

Sec. 3. Provided, that the provisions of this bill shall not affect or change the measurement of water heretofore decreed by a court, but such decreed waters shall be measured according to the law in force at the time such decree was made and entered.

Repeal

Sec. 4. Section 1893, Title VIII, Part IV, Division II, of the Civil Code of the State of Montana and any laws in conflict with this act, are hereby repealed.

Approved March 3, 1899. Session Laws, 1899, p. 126.

NEVADA

[Where section numbers only are given they are those of the "Compiled Laws of Nevada," 1900. The later acts retain their own section numbers.]

State General Laws

Lode Claims — How Located

Sec. 208. Any person, a citizen of the United States, or one who has declared his intention to become such, who discovers a vein or lode may locate a claim upon such vein or lode by defining the boundaries of the claim in the manner hereinafter described, and by posting a notice of such location at the point of discovery, which notice must contain:

First. The name of the lode or claim.

Second. The name of the locator or locators.

Third. The date of the location.

Fourth. The number of linear feet claimed in length along the course

of the vein, each way from the point of discovery, with the width on each side of the center of the vein, and the general course of the vein or lode as near as may be.

What Constitutes Location Work. — Boundaries

SEC. 209. The locator of the lode mining claim must sink a discovery shaft upon the claim located four feet by six feet to the depth of at least ten feet from the lowest part of the rim of such shaft at the surface, or deeper, if necessary to show by such work a lode deposit of mineral in place; a cut or crosscut or tunnel which cuts the lode at a depth of ten feet or an open cut along the said ledge or lode, equivalent in size to a shaft four feet by six feet by ten feet deep, is equivalent to a discovery shaft. The locator must define the boundaries of his claim by removing the top of a tree (having a diameter of not less than four inches) not less than three feet above the ground, and blazing and marking the same, or by a rock in place, capping such rock with smaller stones, such rock and stones to have a height of not less than three feet, or by setting a post or stone one at each corner and one at the center of each side line. When a post is used, it must be at least four inches in diameter by four and one-half feet in length set one foot in the ground. When it is practically impossible, on account of bedrock or precipitous ground, to sink such posts, they may be placed in a mound of earth or stones, or where the proper placing of such posts or other monuments is impracticable or dangerous to life or limb, it shall be lawful to place such posts or monuments at the nearest point properly marked to designate its right place. When a stone is used (not a rock in place) it must not be less than six inches in diameter and eighteen inches in length set two-thirds of its length in the top of a mound of earth or stone, four feet in diameter and two and one-half feet in height. All trees, posts or rocks used as monuments, when not four feet in diameter at the base, shall be surrounded by a mound of earth or stone four feet in diameter by two feet in height, which trees, posts, stones or rock monuments must be so marked as to designate the corners of the claim located; *provided, however*, that the locator of a mining claim shall within twenty days from the date of posting the notice of location define the boundaries of said claim by placing at each corner and at the center of each side line one of the hereinbefore described monuments, and shall within ninety days of the date of posting said location notice perform the location work hereinbefore prescribed. As amended 1907.

Location Notice to be Recorded. — What Notice must Contain

SEC. 210. Any locator or locators of a mining claim, after having established the boundaries of said claims, and after having complied with the provisions of this Act with reference to the establishment of such boundaries, may file with the District Mining Recorder a notice of location, setting forth the name given to the lode or vein, the number of linear feet claimed in length along the course of the vein, the date of location, the date on which the boundaries of the claim were completed, and the name of the locator or locators. Should any claim be located in any section or territory where no district has been as yet formed, or where there is no District Recorder

the locator or locators of such claims may file with the County Recorder, notice of location as set forth above, and said notice of location will be *prima facie* evidence in all courts of justice of the first location of said lode or vein. Within ninety days of the date of posting the location notice upon the claim, the locator shall record his claim with the mining district recorder and the county recorder of the mining district or county in which such claim is situated by a location certificate, which must contain: 1st, the name of the lode or vein; 2d, the name of the locator or locators; 3d, the date of the location, and such description of the location of said claim, with reference to some natural object or permanent monument, as will identify the claim; 4th, the number of linear feet claimed in length along the course of the vein each way from the point of discovery, with a width on each side of the center of the vein, and the general course of the lode or vein as near as may be; 5th, the dimensions and location of the discovery shaft, or its equivalent, sunk upon the claim; 6th, the location and description of each corner, with the markings thereon. Any record of the location of a lode mining claim which shall not contain all the requirements named in this section shall be void. All records of lode or placer mining claims, mill sites or tunnel rights heretofore made by any recorder of any mining district or any county recorder are hereby declared to be valid and to have the same force and effect as records made in pursuance of the provisions of this act. And any such record, or copy thereof, duly verified by a mining recorder or duly certified by a county recorder shall be *prima facie* evidence of the facts therein stated. As amended 1907.

Location Notices must be Correctly Dated

SECTION 1. On and after the first day of April, 1907, it shall be unlawful for any person to antedate or to put any false date, or date other than the one on which the location is made, upon any notice of location of any mining claim in the State of Nevada.

SEC. 2. Any person violating the provisions of this Act shall be deemed guilty of a felony and, upon conviction therefor, shall be imprisoned in the State Prison for not less than three nor more than ten years.

Statutes, 1907, p. 373.

Extent of Claim

SEC. 211. The location or record of any vein or lode claim shall be construed to include all surface ground within the surface lines thereof, and all lodes and ledges throughout their entire depth, the top or apex of which lies inside of such lines extended downward, vertically with all parts of such lodes or veins as continue to dip beyond the side lines of the claim, but shall not include any portion of such lodes, veins, or ledges beyond the end lines of the claim, or the end lines continued, whether by dip or otherwise, or beyond the side lines in any other manner than by the dip of the lode.

Vein, How Followed

SEC. 212. If the top or apex of the lode in its longitudinal course extends beyond the exterior lines of the claim at any point on the surface, or as extended vertically downward, such lode may not be followed in its longitudinal course where it is intersected by the exterior lines.

Relocations, How Made

SEC. 213. If at any time the locator of any mining claim heretofore or hereafter located, or his assigns, shall apprehend that his original certificate was defective, erroneous, or that the requirements of the law had not been complied with before filing; or shall be desirous of changing his surface boundaries or of taking in any part of an overlapping claim which has been abandoned; or in case the original certificate was made prior to the passage of this law, and he shall be desirous of securing the benefits of this act, such locator or his assigns may file an additional certificate, subject to the provisions of this act; *provided*, that such relocation does not interfere with the existing rights of others at the time of such relocation, and no such relocation or the record thereof shall preclude the claimant or claimants from proving any such titles as he or they may have held under previous location.

Relocations of Abandoned Lode Claims

SEC. 214. The relocation of abandoned lode claims shall be by sinking a new discovery shaft and fixing new boundaries in the same manner as if it were the location of a new claim; or the relocator may sink the original discovery shaft ten feet deeper than it was at the time of abandonment, in which case the record must give the depth and dimensions of the original discovery shaft at the date of such relocation, and erect new or adopt the old boundaries, renewing the posts or monuments if removed or destroyed. In either case a new location stake shall be erected. In any case, whether the whole or part of an abandoned claim is taken the record may state that the whole or any part of the new location is located as abandoned property. If it is not known to the relocator that his location is on an abandoned claim, then the provisions of this section do not apply.

Survey of Claim

SEC. 215. Where a locator, or his assigns, has the boundaries and corners of his claim established by a United States deputy mineral surveyor, or a licensed surveyor of this State, and his claim connected with a corner of the public or minor surveys of an established initial point, and incorporates into the record of the claim the field-notes of such survey, and attaches to and files with such location certificate a certificate of the surveyor, setting forth: First, that said survey was actually made by him, giving the date thereof; second, the name of the claim surveyed and the location thereof; third, that the description incorporated in the declaratory statement is sufficient to identify. Such survey and certificate becomes a part of the record, and such record is *prima facie* evidence of the facts therein contained.

Annual Assessment

SEC. 216. The amount of work done or improvements made during each year to hold possession of a mining claim shall be that prescribed by the laws of the United States, to wit: One hundred dollars annually. In estimating the worth of labor required to be performed upon any mining claim, to hold the same under the laws of the United States, the value of a day's labor is hereby fixed at the sum of four dollars; *provided, however*, that in the sense of

this statute eight hours of labor actually performed upon the mining claim shall constitute a day's labor.

Affidavit of Work Done

SEC. 217. Within sixty days after the performance of labor or making of improvements, required by law to be annually performed or made upon any mining claim, the person in whose behalf such labor was performed, or improvements made, or some one in his behalf, shall make and have recorded by the mining district recorder or the county recorder in books kept for that purpose in the mining district or county in which such mining claim is situated, an affidavit setting forth the amount of money expended, or value of labor or improvements made, or both, the character of expenditures or labor or improvements, a description of the claim or part of the claim affected by such expenditures, or labor or improvements, for what year, and the name of the owner or claimant of said claim at whose expense the same was made or performed. Such affidavit, or a copy thereof, duly certified by the county recorder, shall be *prima facie* evidence of the performance of such labor or the making of such improvements, or both.

Recorder's Fee

SEC. 3. For taking and recording the affidavit herein required the mining recorder shall receive a fee of one dollar.

Records to Impart Notice

SEC. 4. The instruments and records mentioned in sections one and two shall be deemed to impart to subsequent purchasers and incumbrancers, and to all other persons whomsoever, notice of the contents thereof.

Sec. 3 and 4, Statutes 1887, page 137.

Rights of Co-owners

SEC. 218. Whenever a co-owner or co-owners shall give to a delinquent co-owner or co-owners the notice in writing or notice by publication provided for in Section 2324, Revised Statutes of the United States, an affidavit of the person giving such notice, stating the time, place, manner of service, and by whom and upon whom such service was made, shall be attached to a true copy of such notice, and such notice and affidavit must be recorded by the mining district recorder or the county recorder, in books kept for that purpose, in the mining district or county in which the mining claim is situated; within ninety days after the giving of such notice, or if such notice is given by publication in a newspaper, there shall be attached to a printed copy of such notice an affidavit of the printer or his foreman or principal clerk of such paper, stating the date of the first, last and each insertion of such notice therein, and when and where the newspaper was published during that time, and the name of such newspaper. Such affidavit and notice shall be recorded as aforesaid within one hundred and eighty days after the first publication thereof. The original of such notice and affidavits, or a duly certified copy of the record thereof, shall be evidence that the delinquent mentioned in section 2324 has failed or refused to contribute his proportion of the expenditure required by that section and of the service or publication of said notice; *provided*, the writing or affidavit hereinafter provided for is not of record. If

such delinquent shall, within the ninety days required by section 2324 aforesaid, contribute to his co-owner or co-owners his proportion of such expenditures, such co-owner or co-owners shall sign and deliver to the delinquent or delinquents a writing, stating that the delinquent or delinquents by name, has within the time required by Section 2324 of the Revised Statutes of the United States contributed his share for the year ——, upon the —— mine, and further stating therein the district, county and State where the same is situate and the book and page where the location notice is recorded; such writing shall be recorded in the office of the county recorder of said county. If such co-owner or co-owners shall fail to sign and deliver such writing to the delinquent or delinquents within twenty days after such contribution, the co-owner or co-owners so failing as aforesaid shall be liable to a penalty of one hundred dollars, to be recovered by any person for the use of the delinquent or delinquents in any court of competent jurisdiction. If such co-owner or co-owners fail to deliver such writing within said twenty days, then the delinquent with two disinterested persons having personal knowledge of such contribution, may make affidavit setting forth in what manner, the amount of, to whom and upon what mine, such contribution was made. Such affidavit, or a record thereof in the office of the county recorder of the county in which said mine is situate, shall be *prima facie* evidence of such contribution.

Placer Claims — How Located

SEC. 220. The location of a placer claim shall be made in the following manner: By posting thereon, upon a tree, rock in place, stone, post, or monument, a notice of location, containing the name of the claim, name of locator or locators, date of location, and number of feet or acres claimed, and by marking the boundaries and the location point in the same manner and by the same means as required by the laws of this State for marking the boundaries of lode claim locations; *provided*, that where the United States survey has been extended over the land embraced in the location, the claim may be taken by legal subdivisions, and, except the marking of the location point as hereinbefore prescribed, no other markings than those of said survey shall be required. *As amended, Stats. 1899, p. 94.*

Labor — Certificate

SEC. 221. Within ninety days after the posting of the notice of location of a placer claim, the locator shall perform not less than twenty dollars' worth of labor upon the claim for the development thereof, and shall have recorded by the mining district recorder and the county recorder of the district and county in which the claim is situated a certificate which shall state the name of the claim, designating it as a placer claim, name of locator or locators, date of location, number of feet or acres claimed, a description of the claim with regard to some natural object or permanent monument, so as to identify the claim, and the kind and amount of work done by him as herein required, and the place on the claim where said work was done. This certificate, or the record thereof, or a duly certified copy of said record, shall be *prima facie* evidence of the recitals therein. But if such certificate do not

state all the facts herein required to be stated, it shall be void. *As amended, Stats 1899, p. 94.*

Area of Mill Sites

SEC. 222. The proprietor of a vein or lode claim or mine, or the owner of a quartz mill or reduction works, may locate five acres of non-mineral land as a mill site.

Mill Sites, How Located

SEC. 223. The locator of a mill site location shall locate his claim by posting a notice of location thereon, which must contain: 1st, the name of the locator or locators; 2d, the name of the vein or lode claim, or mine, of which he is the proprietor, or the name of the quartz mill or reduction works of which he is the owner; 3d, the date of the location; 4th, the number of feet or acres claimed; 5th, a description of the claim by such reference to a natural object or permanent monument as shall identify the claim or mill site. And by marking the boundaries of his claim in the same manner as provided in this Act for the marking of the boundaries of a placer mining claim, so far as the same may be applicable thereto.

Record of Mill Sites

SEC. 224. The locator of a mill-site claim or location shall within thirty days from the date of his location record his location with the mining district recorder and the county recorder of the district or county in which such location is situated, by a location certificate which must be similar in all respects to the one posted on the location.

Mill Sites — Void Locations

SEC. 225. Any record of a mill-site location which shall not contain the name of the locator or locators, the name of the vein or lode claim or mine of which the locator is the proprietor, or the name of the quartz mill or reduction works of which the locator is the owner, the number of feet or acres claimed, and such description as shall identify the claim with reasonable certainty, shall be void.

Tunnel Locations, How Made

SEC. 226. The locator of a tunnel right or location shall locate his tunnel right or location by posting a notice of location at the face or point of commencement of the tunnel which must contain: 1st, the name of the locator or locators; 2d, the date of the location; 3d, the proposed course or direction of the tunnel; 4th, the height and width thereof; 5th, the position and character of the boundary monuments; 6th, a description of the tunnel by such reference to a natural object or permanent monument as shall identify the claim or tunnel right.

Tunnel Lines — How Established

SEC. 227. The boundary lines of the tunnel shall be established by stakes or monuments placed along such lines at an interval of not more than three hundred feet from the face or point of commencement of the tunnel to the terminus of three thousand feet therefrom. The stakes or monuments shall be of the same size and character as those provided for lode or placer claims in this Act.

Record of Tunnel Locations

SEC. 228. The locator of a tunnel right or location shall within sixty days from the date of the location record his location with the mining district recorder and the county recorder of the county or district in which such location is situated, which must be similar in all respects to the one posted on the location. Any record of a tunnel right or location which shall not contain all the requirements named in this section shall be void.

Blind Lodes—How Located

SEC. 229. All blind lodes, or veins or lodes not previously known to exist, discovered in a tunnel run for the development of a vein or lode, or for the discovery of mines, and within three thousand feet from the face of such tunnel, shall be located upon the surface and held in like manner as other lode claims under the provisions of this Act.

Application of Provisions of Act

SEC. 230. The provisions of this Act shall be construed as equally applicable to all classes of locations, except where the requirement as to any one class is manifestly inapplicable to any other class or classes.

PRESERVATION OF THE MINING RECORDS

Duplicate Copy

SEC. 244. It shall be the duty of each and every mining recorder of the several mining districts of the State to require all persons locating and recording a mining claim to make a duplicate copy of each and every mining notice, which copy the said mining recorder shall carefully compare with the original, and mark "duplicate" on its face or margin, and he shall immediately deposit with or transmit the same to the county recorders of the respective counties in which said mining district may be located.

District Recorder's Fee

SEC. 245. The said district mining recorders, at the time of comparing said duplicate notices with the original, shall collect from the locators of said mining claims the sum of one dollar for each and every notice compared, which sum he shall transmit, together with the said duplicate notices, to the county recorders of the respective counties in which said mining claims shall be located.

Forwarding Copies

SEC. 246. Whenever, owing to the distance of the mining district from the county seat, it becomes inconvenient for the district mining recorder to personally deposit the duplicate copy with the county recorder, then in that case he may forward the same by mail or express, or such other manner as will insure safe transit and delivery to the county recorder.

County Recorder's Fee

SEC. 247. The county recorders of the several counties shall receive for their services for recording each of said duplicate notices mentioned in section two of this Act, the sum of one dollar; *provided*, that in case the location is made outside of an organized mining district or in the absence of a mining recorder in any organized district, then the person or persons making such

location shall within ninety days after making such location transmit a duplicate copy of such notice to the recorder of the county in which the location is made and the recorder shall record the same for a fee of one dollar. *As amended, Stats. 1897, p. 77.*

Evidence

SEC. 248. The record of any original or duplicate notice of the location of a mining claim in the office of the county recorder, as herein provided, shall be received in evidence, and have the same force and effect in the courts of the State, as the original mining district records. *As amended, Stats. 1897, p. 77.*

Fine for Misdemeanor

SEC. 249. Any person neglecting or refusing to comply with the provisions of this act, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be punished by a fine not exceeding five hundred dollars, or by imprisonment in the county jail not exceeding six months, or by both such fine and imprisonment.

County Recorders to be Ex Officio District Mining Recorders

SEC. 7. In every mining district in this State, in which the seat of government of any county is situated, the County Recorder of said county shall be ex officio district mining recorder, subject in the discharge of his duties to such rules, regulations and compensations as may now be in force or hereafter prescribed by the mining laws of the mining districts respectively to which this Act is applicable. He shall, as such ex officio mining recorder, be responsible on his official bond for the faithful performance of the duties of his office and the correct and safe keeping of all the records thereof, and the correct and safe keeping of the copies of all the records mentioned and referred to in section two of this Act.

Records to Impart Notice

SEC. 8. All instruments of writing relating to mining claims now copied into books of mining or other records, now in the office of the County Recorders of the several counties of this State, shall, after the passage of this Act, be deemed to impart to subsequent purchasers and incumbrancers, and all other persons whomsoever, notice of the contents thereof; *provided*, that nothing herein contained shall be construed to affect any rights heretofore acquired or vested.

Copies may be Read in Evidence

SEC. 9. Copies of the records of all such instruments mentioned in section one of this Act, duly certified by the Recorder in whose custody such records are, may be read in evidence under the same circumstances and rules as are now or may hereafter be provided by law, for using copies of instruments relating to mining claims or real estate, duly executed or acknowledged or proved and recorded.

GRUBSTAKE CONTRACTS MUST BE RECORDED

Evidence in Courts

SECTION 1. All grubstake contracts and prospecting agreements hereafter

entered into, and which may in any way affect the title of mining locations, or other locations under the mining laws of this State, shall be void and of no effect, except between the parties to said contract or agreement, unless the instrument shall first have been recorded in the office of the County Recorder of the county in which said instrument is made. The instrument or instruments shall be duly acknowledged before a Notary Public or other person competent to take acknowledgments. Grubstake contracts and prospecting agreements, duly acknowledged and recorded as provided for in this Act, shall be *prima facie* evidence in all courts of justice in this State in all cases wherein the title to mining locations and other locations under the mining laws of this State are in dispute.

Statutes 1907, p. 370.

An Act to Encourage Mining

Mineral Lands

Sec. 281. The several grants made by the United States to the State of Nevada reserved the mineral lands. Sales of such lands made by the State were made subject to such reservation. Any citizen of the United States, or person having declared his intention to become such, may enter upon any mineral lands in this State, notwithstanding the State's selection, and explore for gold, silver, copper, lead, cinnabar, or other valuable mineral, and upon the discovery of such valuable mineral may work and mine the same in pursuance of the local rules and regulations of the miners and the laws of the United States; *provided*, that after a person who has purchased land from the State has made valuable improvements thereon, such improvements shall not be taken or injured without full compensation. But such improvement may be condemned for the uses and purposes of mining in like manner as private property is by law condemned and taken for public use. Mining for gold, silver, copper, lead, cinnabar, and other valuable mineral, is the paramount interest of this State, and is hereby declared to be a public use.

Minerals Excluded

Sec. 282. Every contract, patent or deed hereafter made by this State or the authorized agents thereof, shall contain a provision expressly reserving all mines of gold, silver, copper, lead, cinnabar and other valuable minerals that may exist in such land, and the State, for itself and its grantees, hereby disclaims any interest in mineral lands heretofore or hereafter selected by the State on account of any grant from the United States. All persons desiring titles to mines upon lands which have been selected by the State must obtain such title from the United States under the laws of Congress, notwithstanding such selection. *As amended, Stats. 1897, p. 36.*

Recorder Must Give Locator Receipt

What Receipt Must Contain

Section 1. Whenever the locator of a mining claim shall file his certificate of location in accordance with the law and pay the prescribed fees therefor, it shall be the duty of the Mining District Recorder, and of the County Recorder, with whom said certificate is filed, forthwith to give such

locator, or his agent, a receipt therefor; said receipt shall contain name of the claim given in notice filed and date of location thereof, stating the day and hour such certificate of location was filed.

Prima Facie Evidence

SEC. 2. The receipt called for in section one of this Act shall be *prima facie* evidence that the certificate of location has been duly filed, and the date of filing.

Seal of Mining Recorder

SEC. 3. Each District Mining Recorder shall provide a seal on which shall be engraved the name of the mining district, the county and State, with which said seal he shall authenticate all of his official acts, which seal, together with his official documents and books, shall not be liable to be seized on execution.

Duties of County Recorders

SEC. 4. It shall be the duty of the several County Recorders, within ten days after the passage of this Act, to notify each of the several District Mining Recorders in their respective counties of the passage of this Act, which shall take effect on and after the first day of April, 1907.

Penalties

SEC. 5. Any Mining District Recorder or County Recorder neglecting or refusing to comply with the provisions of this Act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding five hundred ($500) dollars, or by imprisonment in the county jail not exceeding six months, or by both such fine and imprisonment.

Statutes 1907, p. 193.

CONVEYANCE OF MINING CLAIM

In Same Manner as Real Estate

SECTION 1. Conveyance of mining claims shall hereafter require the same formalities and be subject to the same rules of construction as the transfers and conveyances of other real estate.

Former Conveyances Construed

SEC. 2. All conveyances of mining claims heretofore made by bills of sale or other instruments in writing with or without seals, recorded or unrecorded, shall be construed in accordance with the lawful local rules, regulations and customs of the miners in the several mining districts of this Territory; and if heretofore regarded valid and binding in such districts, shall have the same force and effect between the parties thereto, as *prima facie* evidence of sale, as if such conveyance had been made by deed under seal.

How Proved

SEC. 3. The location and transfers of mining claims heretofore made, shall be established and proved in contestation before courts, by the local rules, regulations or customs of the miners in the several mining districts of the territory in which such location and transfers were made.

Lands Defined

SEC. 4. The term "lands," as used in this Act, shall be construed as co-extensive in meaning with lands, tenements, and hereditaments, and shall include in its meaning all possessory right to the soil for mining and other purposes, and the term "estate and interest in lands," shall be construed and embrace every estate and interest, present and future, vested and contingent, in lands as above defined.

Mortgage to be Recorded

SEC. 5. A mortgage for a good and valuable consideration upon possessory claims to public lands, all buildings and improvements upon such lands, all quartz and mining claims, and all such personal property as shall be fixed in its structure to the soil, acknowledged in manner and form as mortgages upon real estate are required by law to be acknowledged and recorded in the office of the Recorder in the county in which the property is situated, shall have the same effect against third persons as mortgages upon real estate.

Mining Rules

SEC. 6. This Act shall not be so construed as to interfere or conflict with the lawful mining rules, regulations, or customs in regard to the locating, holding, or forfeiture of claims, but, in all cases of mortgages of mining interests under this Act, the mortgagee shall have the same right to perform the same acts that the mortgagor might have performed for the purpose of preventing a forfeiture of the same under the said rules, regulations, or customs of mines, and shall be allowed such compensation therefor as shall be deemed just and equitable by the court ordering the sale upon a foreclosure; *provided*, that such compensation shall, in no case, exceed the amount realized from the claim by a foreclosure and sale.

Deed of Minor Held Valid. — Proviso. — Suits Pending

SEC. 7. In all cases in this State since the first day of July, A.D. eighteen hundred and sixty-seven, where minors over the age of eighteen years have sold interests acquired by them in mining claims or locations by virtue of their having located such claims, or having been located therein by others and have executed deeds purporting to convey such interests, such deeds, if otherwise sufficient in law, shall be held valid and sufficient to convey such interest fully and completely, notwithstanding the minority of the grantor, and without any power or right of subsequent revocation; *provided*, that this section shall not apply to cases where any fraud was practiced upon such minor, or any undue or improper advantage was taken by his purchaser or any other person to induce such minor to execute such deed; *and provided further*, that this section shall not apply to or affect any suits which may now be pending in any courts of this State, in which the legality or validity of such deeds may be involved.

Minors Empowered to Sell or Convey

SEC. 8. All minors in this State, over the age of eighteen years, are hereby authorized and empowered to sell and convey by deed such interests

as they may have acquired, or may hereafter acquire, in mining claims or mining locations within this State, by virtue of locating the same, or being located therein, and such deed shall, if otherwise sufficient in law, be held valid and sufficient to convey such interest fully and completely, and without the right of subsequent revocation, notwithstanding the minority of the grantor, subject, however, to the same provisions and limitations contained in the first section of this Act.

Actions for Title and Possession

Application for Patent — Jurisdiction of Court Right of Possession

Section 1. In all actions brought to determine the right of possession of a mining claim, or metalliferous vein or lode, where an application has been made to the proper officers of the Government of the United States by either of the parties to such action for a patent for said mining claim, vein, or lode, it shall only be necessary to confer jurisdiction on the court to try said action, and render a proper judgment therein, that it appear that an application for a patent for such mining claim, vein or lode has been made, and that the parties to said action are claiming such mining claim, vein, or lode, or some part thereof, or the right of possession thereof.

Trial, When Postponed

Sec. 2. In actions involving the title to mining claims and quartz ledges, if it be made to appear to the satisfaction of the court that in order that justice may be done, and the action fairly tried on its real merits, it is necessary that further developments should be made, and that the party applying has been guilty of no laches and is acting in good faith, the court shall grant the postponement of the trial of the action, giving the party a reasonable time in which to prepare for trial. And in granting such postponement, the court may, in its discretion, annex as a condition thereto, an order that the party obtaining such postponement shall not, pending the trial of the action, remove from the premises in controversy any valuable quartz, rock, earth, or ores, and for any violation of an order so made, the court or the Judge thereof may punish for contempt, as in the cases of violation of an order of injunction, and may also vacate the order of postponement.

Statute of Limitations

Recovery of Mining Claims

Section 1. No action for the recovery of mining claims, or for the recovery of the possession thereof, shall be maintained, unless it shall appear that the plaintiff, or those through or from whom he claims, were seized or possessed of such mining claim, or were the owners thereof, according to the laws and customs of the district embracing the same, within two years before the commencement of such action. Occupation and adverse possession of a mining claim shall consist in holding and working the same, in the usual and customary mode of holding and working similar claims in the vicinity thereof. All the provisions of this Act, which apply to other real estate, so far as applicable, shall be deemed to include and apply to mining claims;

provided, that in such application "two years" shall be held to be the period intended whenever the term "five years" is used; *and, provided further*, that when the terms "legal title" or "title" are used, they shall be held to include title acquired by location or occupation, according to the usages, laws, and customs of the district embracing the claim.

LIEN — EXEMPTION — INJUNCTION

Preferred Lien

SECTION 1. Where ore is delivered to a custom mill or reduction works, and either sold to said mill or reduction works, or worked at a percentage, the party or parties so furnishing ore to mill or reduction works shall have a preferred lien upon the bullion product, and upon the ore not reduced, as against attachment and other creditors.

Lien on Mine for Wages and Material

SEC. 2. All miners, laborers and others who work or labor to the amount of five (5) dollars or more in or upon any mine, or upon any shaft, tunnel, adit, or other excavation, designed or used for the purpose of prospecting, draining or working any such mine; and all persons who shall furnish any timber or other material of the value of five (5) dollars or more, to be used in or about any such mine, whether done or furnished at the instance of the owner of such mine, or his agent, shall have, and may each respectively claim and hold, a lien upon such mine for the amount and value of the work or labor so performed, or material furnished; and every contractor, sub-contractor, architect, builder, or other persons, having charge or control of any mining claim, or any part thereof, or of the construction, alteration or repair, either in whole or in part, of any building or other improvements, as aforesaid, shall be held to be the agent of the owner, for the purposes of this chapter.

Miner's Property Exempt from Execution

SEC. 3. The cabin or dwelling of a miner, not exceeding in value the sum of five hundred dollars, also his sluices, pipes, hose, windlass, whim, derrick, cars, pumps, tools, implements, and appliances necessary for carrying on any kind of mining operations, not exceeding in value the aggregate sum of five hundred dollars, and two horses, mules, or oxen, with their harness, and food for such horses, oxen, or mules for one month, when necessary to be used for any whim, windlass, derrick, car, pump, or hoisting apparatus, are exempt from execution.

Injunction on Working of Mine

SEC. 4. If, upon the hearing of an application for an injunction, or for the dissolution of an injunction, it does not satisfactorily appear that there is a sufficient cause for an injunction, or if it appear that the extent of the injunction is too great, it shall be refused, dissolved, or modified, as the case may be, and upon all such applications in actions respecting mines, the court or Judge hearing the same may, instead of granting or continuing the injunction, make an order requiring the party against whom the application is made to give a bond in an amount fixed by such court or Judge, with sufficient sureties, to be approved by such court or Judge, conditioned for the payment to

the plaintiff of all damages which he may sustain by reason of the use or occupation of the mine, or other acts, complained of, by the party giving the bond, his or its agents, servants, employees, grantees, or other persons by his or its consent pending the litigation, if the plaintiff finally recover; or that upon failure to give such bond within the time prescribed in the order, the injunction shall be granted, or continued, as the case may be; or the court or Judge may appoint a receiver to take charge of the mine, or the proceeds thereof, pending the litigation.

ASSAYING

Description of Bars of Bullion

SECTION 1. Every person or firm now engaged in, or who may hereafter engage in the business of assaying within the State of Nevada, shall be required to place a written description pasted on or stamped upon every bar of bullion or amalgam melted, retorted, assayed or refined by such person or firm.

Neglect or Refusal

SEC. 2. Every person or firm within the State of Nevada, engaged in or carrying on the business mentioned in the first section of this Act, who shall neglect or refuse to comply with its provisions, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be punished by a fine of not less than one thousand dollars, and not more than five thousand dollars, and shall be imprisoned in the county jail not less than one month nor more than six months, for each and every such refusal or neglect.

FALSE STATEMENT REGARDING ORE

Changing Value of Ore a Misdemeanor. — Penalty

SECTION 1. Any person, corporation, or association, or the agent of any person, corporation, or association, engaged in the milling, smelting, sampling, concentrating, reducing, shipping or purchasing of ores in this State, who shall in any manner knowingly alter or change the true value of any ores delivered to him or them, so as to deprive the seller of the correct value of the same, or who shall substitute other ores for those delivered to him or them, or who shall issue any bill of sale or certificate of purchase, that does not exactly and truthfully state the actual weight, assay value and total amount paid for any lot or lots of ore purchased, or who, by any secret understanding or agreement with another, shall issue a bill of sale or certificate of purchase that does not correctly and truthfully set forth the weight, assay value, and total amount paid for any lot or lots of ore purchased by him or them, shall be guilty of a misdemeanor, and on conviction thereof, shall be fined in a sum not exceeding one thousand dollars, nor less than one hundred dollars, or imprisonment in the county jail not more than one year, or both, at the discretion of the court.

RECOVERY OF STOLEN ORE

Assayers and Buyers to keep Record of Ores, etc.

SECTION 1. That every assayer, person, partnership, association or corporation engaged, or who or which may hereafter be engaged, directly, indirectly, or occasionally in the business, or who or which being engaged in other business, shall at any time assay, mill, sample, reduce, ship, transport,

buy, purchase, trade in, barter, concentrate, smelt, refine, or sell metalliferous bearing ores, free gold, gold dust, gold amalgam, gold nuggets, gold specimens, gold bullion, free silver, silver nuggets, silver bullion, lead or lead bullion, copper or copper bullion, shall keep and preserve a book of records thereof, in which shall be entered at the times they shall occur the following entries, with the dates thereof:

First — The name of the assayer, person, persons, partnership, association or corporation on whose behalf such ore, free gold, gold dust, gold amalgam, gold nuggets, gold specimens, gold bullion, free silver, silver nuggets, silver bullion, lead, lead bullion, copper or copper bullion, is delivered, or purchased, or sampled or transported, or sold, or reduced, or smelted, or milled, as the case may be.

Second — The weight or quantity thereof, and a short description of each and every lot or consignment thereof.

Third — The name or names of the teamster or teamsters, packer or packers, or other person or persons actually delivering or transferring the the same and each and every portion of the same, and the name or names of the owner or owners of the team, pack train, railway or express company, automobile or other conveyance used or employed in and for such delivery.

Fourth — The name and location of the mine, mining claim, mining location, or other premises from which the same has been or purports to have been extracted, mined or procured, and if the products or property consists of concentrates, amalgam, bullion concentrates, free gold or free silver, there shall also be recorded the name and location of the mill, concentrator, refinery or smelter which milled or purported to have milled, reduced, concentrated, smelted or refined the same, and for whom such milling, reducing, refining, concentration or smelting was done.

Fifth — The date of the receipt thereof, and whether received by purchase, barter, trade, or gift, or for treatment, concentration, reduction, sampling, refining, assay, transportation, sale, exchange or otherwise.

Sixth — Whenever the assayer, person, partnership, association or corporation receiving any property hereinabove specifically designated, shall become the owner thereof by purchase, barter, trade or exchange there shall also be recorded in said book a statement showing the amount and terms of such purchase, barter, trade or exchange.

Seventh — Whenever the assayer, person, partnership, association or corporation receiving any property herein specifically designated shall as agent, factor, broker or in any other capacity sell, barter, trade or exchange the same for and in behalf of the owner or reputed owner thereof, there shall also be recorded in said book the date, names of the parties, the amount and character of the property sold or disposed of, and the amount of such transaction.

Eighth — The interest, if any, of the delivering person, partnership, association or corporation in the property or any part thereof herein above specifically designated, whether as owner, lessee, pledgee, superintendent, foreman, or workman in the mine, mining claim, mining location, premises, mill, concentrator, sampler, refiner or smelting works from which the same was or purports to have been mined or treated.

Stolen Ore, How Recovered

SEC. 2. Whenever affidavit shall be made by any person before any Justice of the Peace or District Judge that any ore, free gold, gold dust, gold amalgam, gold nuggets, gold specimens, gold bullion, free silver, silver nuggets, silver bullion, lead, lead bullion, copper or copper bullion has been stolen or unlawfully taken from him or from any copartnership, association or corporation in which he is interested, or in which he is an officer or agent, stating as near as may be the character, amount and value thereof, such person by himself, or his attorneys, or both, upon presentation of such affidavit, or a copy thereof, duly certified as such by the officer before whom the same is verified, shall have access to such book or books of any and every assayer, person, partnership, association or corporation hereby required to keep the same, and may freely and without hindrance or interference, read and examine all entries which may have been made therein during a period of sixty days next preceding the date of such affidavit; *provided, nevertheless*, that the person making such affidavit or the partnership, association, or corporation, or in whose behalf the same is made, shall at the time thereof have a present ownership or interest in the assay office, mine, claim, premises, mill, smelter, concentrator, refinery, or establishment, from which such ores, free gold, gold dust, gold amalgam, gold specimens, gold bullion, silver, silver nuggets, silver bullion, lead, lead bullion, copper, copper bullion, has been stolen or unlawfully taken or alleged to have been stolen or unlawfully taken.

Failure to Keep, or Making False Record Punished

SEC. 3. Every assayer, person, copartnership, association or corporation described in section one of this Act, who or which shall fail, refuse, or neglect to keep the book or books, or to make the entries therein as hereby required, or who or which shall make or cause to be made any false or fictitious entry therein, or who or which shall refuse the right of inspection thereof to any person entitled thereto, as herein provided, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined in any sum not less than three hundred dollars or more than one thousand dollars.

Failure, Refusal or Neglect Not to Operate as Defense

SEC. 4. If any assayer, person, partnership, association, or corporation shall fail, refuse, or neglect to make the inquiries or secure the information necessary to the making of the proper entries in said book as provided in section one of this Act, or shall so negligently and imperfectly make such entry or entries that the nature, character or value of the ore or other property therein mentioned, the assayer, partnership, person, association or corporation delivering the same or receiving the proceeds thereof cannot be ascertained, identified or determined, or shall fail, neglect or refuse to keep such book or books, or shall wilfully lose or mislay or wilfully or knowingly permit to be lost or mislaid the said book or books, or that the same cannot be produced for inspection as herein provided, such failure, refusal or neglect shall not excuse, protect or operate as defense to any such assayer, partnership, association, or corporation as defendant or defendants in any action or prosecution brought or instituted under the provisions of this Act.

SEC. 5. All Acts and parts of Acts in conflict with the provisions of this Act are hereby repealed.

SEC. 6. This Act shall take effect on and after June 1, 1907.

[Statutes of 1907, p. 416.]

DAMAGE TO OR TRESPASS ON MINING CLAIM

Manner of Working Mine. — Damages, How Assessed

SECTION 1. Any person or persons, company or corporation, being the owner or owners of, or in possession under any lease or contract for the working of any mine or mines within the State of Nevada, shall have the right to institute and maintain an action, as provided by law, for the recovery of any damages that may accrue by reason of the manner in which any mine or mines have been or are being worked and managed by any person or persons, company or corporation, who may be the owner or owners, or in possession of and working such mine or mines under a lease or contract, and to prevent the continuance of working and managing such mines or mine in such manner as to hinder, injure, or by reason of tunnels, shafts, drifts or excavations, the mode of using, or the character and size of the timbers used, or in any wise endangering the safety of any mine or mines adjacent or adjoining thereto. And any such owner of, or in possession of any mine or mining claim, who shall enter upon or into, in any manner, any mine or mining claim, the property of another, and mine, extract, excavate or carry away any valuable mineral therefrom, shall be liable to the owner or owners of any such mine or mines trespassed upon in twice the amount of the gross value of all such mineral mined, extracted, excavated, or carried away, to be ascertained by an average assay of the excavated material or the ledge from which it is taken. *As amended, Stats. 1891, p. 87.*

Lien of Judgment and Continuation Thereof

SEC. 2. Any judgment obtained for damages under the provisions of this Act shall become a lien upon all the property of the judgment debtor or debtors, not exempt from execution, in the Territory of Nevada, owned by him, her, or them, or which may afterwards be acquired, owned by him, her, or them, or which may afterwards be acquired, as is now provided for by law, which lien shall continue two years, unless the judgment be sooner satisfied.

Survey may be Applied for. — What Affidavit shall State. — Notice of Application, and How Served. — Order of Court. — Costs

SEC. 3. Any person or persons named in the first two sections of this Act, shall have the right to apply for and obtain from any Distirct Court, or the Judge thereof, within this Territory, an order of survey in the following manner: An application shall be made by filing the affidavit of the person making the application, which affidavit shall state, as near as can be described, the location of the mine or mines of the parties complained of, and as far as known, the names of such parties; also, the location of the mine or mines of the parties making such application, and that he has reason to believe, and does believe, that the said parties complained of, their agents or employees, are or have been trespassing upon the mine or mines of the party complaining,

or are working their mine in such manner as to damage or endanger the property of the affiant. Upon the filing of the affidavit as aforesaid, the court or Judge shall cause a notice to be given to the party complained of, or the agent thereof, which notice shall state the time, place, and before whom the application will be heard, and shall cite the party to appear in not less than five nor more than ten days from the date thereof, to show cause why an order of survey should not be granted; and upon good cause shown, the court or Judge shall grant such order, directed to some competent surveyor or surveyors, or to some competent mechanics, or miners, or both, as the case may be, who shall proceed to make the necessary examination as directed by the court, and report the result and conclusions to the court, which report shall be filed with the Clerk of said court. The costs of the order and survey shall be paid by the persons making the application, unless such parties shall subsequently maintain an action and recover damages, as provided for in the first two sections of this Act, by reason of a trespass or damage done or threatened prior to such survey or examination having been made, and in that case, such costs shall be taxed against the defendant as other costs in the suit. The parties obtaining such survey shall be liable for any unnecessary injury done to the property in the making of such survey.

MAJORITY OWNERS OF MINE MAY CHARGE INTEREST OF MINORITY

Mining Companies May Bring Suit

SECTION 1. When three or more persons, owning or claiming as joint tenants, tenants in common or coparceners, a majority of the number of feet, shares, or interests in any mining claim in this State, shall have formed, or shall hereafter form themselves into a corporation or organized association, for the purpose of working and developing such mining claim, and shall actually proceed to work and develop the same, such corporation or association may, without demand, except by commencement of action, institute in any court of competent jurisdiction, suit in its corporate or associate name as upon an implied contract for the payment of money, against any person not a stockholder in or member of such corporation or association, owning or claiming to own in said mining claim as joint tenant, tenant in common or coparcener, for his or her proportion of the money actually expended or indebtedness assumed by such corporation or association, in the actual and necessary working and development of said mining claim.

Money Expended or Indebtedness Assumed

SEC. 2. The proportion of money expended or indebtedness assumed by such corporation or association, and for the payment of which such joint tenant, tenant in common or coparcener, is made liable under the provisions of this Act, shall be deemed such an amount of money or indebtedness as bears the same proportion to the whole amount of money expended or indebtedness assumed, as the interest in the mining claim owned or claimed by such joint tenant, tenant in common, or coparcener, bears to the whole of the mining claim.

Who May Join in Suit. — Issue of Facts. — Judgment to be Separate

SEC. 3. Any number of such joint tenants, tenants in common or co-

parceners, may be joined as parties defendant in any suit instituted under the provisions of this Act; but each defendant shall be entitled to plead separately; and when the cause shall be tried by jury, as many of the separate issues of fact as may be agreed upon by the parties may be determined by the same jury. Judgment shall be rendered for or against each defendant separately, and the costs of suit may be apportioned among the several parties defendant, against whom judgment may be rendered, in such manner as to the court may appear just and equitable; *provided*, that in all cases the defendant, prior to the institution of suit under the provisions of this Act, shall be entitled to three weeks' notice of the intention of such corporation or association to institute such suit, which notice may be either personally or by publication in some newspaper published in the county within which such mining claim is located; and if none be published in said county, then in the nearest adjoining county.

What Summons Shall Specify

SEC. 4. The summons shall specify: First, the amount of money actually expended, or indebtedness assumed, by such corporation or association, in the actual and necessary working and development of said mining claim; and, second, the amount due from each joint tenant, tenant in common, or coparcener, as his or her proportion of such money or indebtedness.

Where Suit is Brought — Service of Summons

SEC. 5. All suits instituted under the provisions of this Act shall be brought in the county within which the mining claim may be located, and where the defendant is a non-resident of the county within which the suit is brought, but a resident of the State, service of summons may be had personally, as in other cases, or by publication in the same manner as provided by law for service of summons by publication where the defendant is a non-resident of the State and a resident of the State of California; and all of the provisions of law regulating proceedings in other civil places shall, so far as the same are applicable, apply to suits instituted under this Act.

Lien

SEC. 6. The amount of money expended or indebtedness assumed, by such corporation or association, as the proportion due from such joint tenant, tenant in common, or coparcener, for the actual and necessary working and development of said mining claim, shall be a lien in favor of such corporation or association upon the interest of such joint tenant, tenant in common, or coparcener, in such mining claim, from the time such money was expended, or indebtedness assumed by such corporation or association; which lien shall bind such interest from the time of such payment or assumption as against any subsequent purchaser, mortgagee, or other person acquiring a lien upon, or title to, or interest in, the same. Suit may be instituted against the person owning or claiming such interest at the time of the commencemnt of the action for the recovery of the whole amount due upon such interest; and all judgment rendered in any action instituted under the provisions of this Act, and any execution issued thereon, shall bind and run against such interest,

and no other property of the defendant shall be subject to execution on said judgment.

Sales to be Absolute

SEC. 7. All sales of any interest in a mining claim under an execution issued on a judgment obtained in any suit instituted under the provisions of this Act shall be absolute, and the purchaser shall be entitled to the immediate possession of the interest purchased by him at such sale.

CORPORATIONS FOR MINING AND MILLING

Powers and Duties

Power to Purchase and Hold Mining Property

SECTION 1. All corporations for the purpose of mining, formed, or which may be hereafter formed, under the laws of the State of Nevada, or which were formed under the laws of the Territory of Nevada, shall have power to purchase and hold such mining property as they may deem meet.

How Exercised

SEC. 2. The power to make such purchases by any corporation shall be exercised only by a majority, in interest, of all the stockholders in any such corporation, or by such person or persons as may, by such majority, be duly appointed to act in their stead.

Capital Stock

SEC. 3. In corporations already formed, or which may hereafter be formed under this Act, where the amount of the capital stock of such corporation consists of the aggregate valuation of the whole number of feet, shares, or interest in any mining claim in this State, for the working and development of which such corporation shall be, or has been formed, no actual subscription to the capital stock of such corporation shall be necessary; but each owner in said mining claim shall be deemed to have subscribed such an amount to the capital stock of such corporation as under the by-laws will represent the value of so much of his or her interest in said mining claim, the legal title to which he or she may, by deed, deed of trust, or other instrument, vest, or have vested in such corporation, for mining purposes; such subscription to be deemed to have been made on the execution and delivery to such corporation of such deed, deed of trust, or other instrument; nor shall the validity of any assessment levied, or which may hereafter be levied, by the Board of Trustees of such corporation, be affected by reason of the fact that the full amount of the capital stock of such corporation, as mentioned in its certificate of incorporation, shall not have been subscribed, as provided in this section; *provided*, that the greater portion of said amount of capital stock shall have been subscribed; *and provided further*, that this section shall not be so construed as to prohibit the stockholders of any corporation formed, or which may be formed for mining purposes, as provided in this section, from regulating the mode of making subscriptions to its capital stock and calling in the same by by-laws or express contract.

To be Governed by District Mining Laws. — Proviso

SEC. 4. All corporations already formed, or which may hereafter be

formed under this Act for mining purposes, shall be governed by the mining laws of the district where the mine is located; *provided*, that the amount of money so expended in incorporating said company, and the procuring of the necessary books for said incorporation, shall be deemed in law as so much money expended in working the claim. [*There is some doubt as to the validity of this proviso.* See p. 123.]

Rights of Corporations

SEC. 5. Corporations formed under the provisions of this Act for mining, milling, or ore reduction purposes, may subscribe to and become stockholders in any corporation, company or association now formed, or which may hereafter be formed, for the purpose of constructing any tunnel, shaft or other work, which may be calculated to aid or facilitate the exploration, development or working of any mine or mining ground in this State; and any corporation so becoming a stockholder therein shall, in proportion to its interest, be subject to all the liabilities and entitled to all the rights and privileges of an individual stockholder.

Trustees to Convey Property on Dissolution

SEC. 6. When any mining incorporation, holding or working any mine or mines in this State, shall disincorporate under the provisions of this Act, the Board of Trustees of said corporation shall convey by deed to the stockholders of said company all mines and other property of said corporation, in proportion to the amount of stock each stockholder shall hold in the mine or mines and other property owned by said corporation, which deed shall be recorded in the office of the County Recorder of the county in which the mine is located.

Mining Corporations May Sue Delinquents

SEC. 7. Corporations, and associations and companies, formed for mining purposes, are hereby authorized, in their corporate or associate name, to institute suits against any one or more of their members who may be delinquent in the payment of their assessments.

Intention of Suit to be Published

SEC. 8. Before such suit is brought before any court having jurisdiction of the amount, such delinquent, and the amount he may owe, and the intention to institute suit thereon, shall be advertised in a newspaper published in the county where the mining claim is located, and if no newspaper be published in such county, then in a newspaper published in the nearest adjoining county, for at least once a week for one month before such suit is instituted.

Majority of Members to Authorize Suit

SEC. 9. It shall be proved on the trial of such suit that the trustees or managing agents of said corporation, or association, or company, were fully authorized to institute such suit by a majority of the members of said corporation, or association, or company.

Competent Witnesses

SEC. 10. The members of such corporation, association, or company, shall be competent witness to establish the assessment and indebtedness of the delinquent member.

Application of Act

SEC. 11. This Act shall apply only to such corporations, associations and companies who are actually engaged in mining, and for delinquency in assessments for mining.

CORPORATIONS MAY CONSOLIDATE

Two or More Mining Companies May Consolidate. — Consent of Stockholders Required. — Notice by Advertisement. — Certificate, When Filed. — How Signed — Boards of Trustees or Directors. — Certificate, What to Contain

SECTION 1. It shall be lawful for two or more corporations formed, or that may be hereafter formed, under the laws of this State for mining purposes, which own or possess mining claims or lands adjoining each other or lying in the same vicinity, to consolidate their capital stock, debts, property, assets and franchises in such a manner and upon such terms as may be agreed upon by the respective boards of directors or trustees of such companies so desiring to consolidate their interests; but no such consolidation shall take place without the consent of stockholders representing two-thirds of the capital stock of each company, and no such consolidation shall in any way relieve such companies or the stockholders thereof from any and all just debts and liabilities; and, in case of such consolidation, due notice of the same shall be given by advertisement for at least twenty days in one newspaper in the county and State where the said mining property is situated, if there be one published therein, and also in one newspaper published in the county where the principal place of business of any of said companies shall be; and when the said consolidation is completed a certificate thereof, containing the manner and terms of said consolidation, shall be filed in the office of the County Clerk in the county in which the original certificate of incorporation of any of said companies shall be filed, and a copy thereof shall be filed in the office of the Secretary of State. Such certificate shall be signed by a majority of each board of directors of the original companies, and it shall be their duty to call, within thirty days after the filing of such certificate, and after at least ten days public notice in some newspaper in the county where its property is situated, a meeting of the stockholders of all of said companies so consolidated, to elect a board of trustees or directors for the consolidated company for the next year ensuing. Said certificate shall also contain the name of the company, the object for which it, the same, has been formed, which shall be the same as the original corporations, the amount of its capital stock, the time of its existence (not to exceed fifty years), the number of shares of which the capital stock shall consist, the number of trustees or directors who shall manage the affairs of the company for the first year, and the name of the city or town in which the principal place of business of the company is to be located.

Written Consent of Stockholders. — Proxy

SEC. 2. When two or more companies may desire to consoldiate in accordance with the provisions of section one of this Act, and shall have given the required notice, as in said section provided, any stockholder consenting thereto shall be required to give his consent in writing, stating the number of shares held by him, and that he is in favor of such consolidation; *provided*, that any and all stock standing in the name of trustees may be voted by such trustees the same as by the owners thereof, and the consent of such trustees shall be equivalent to the consent of such owners; *and provided further*, that any person holding the general proxy of any stockholder shall be entitled to give or refuse his consent to such consolidation, the same as the owner of such stock for which said property is held.

Foreign Corporations May Consolidate with Home Corporations.— Agent to be Appointed, When — Penalty

SEC. 3. The provisions of this Act shall be construed to permit and allow foreign corporations, owning mining property in this State, to consolidate with corporations organized under the laws of this State; *provided*, that in all such cases the principal place of business of such consolidation, when effected, shall be located in the State of Nevada, or in the State where such foreign corporation desiring such consolidation resides, as may be determined by a vote of two-thirds of the stockholders of such consolidation after the same shall be completed, and in case it shall be determined upon such vote being had, to remove the principal place of business of such consolidation out of this State, the certificate provided for in section one shall be amended so as to show the county and State where the principal place of business is located; *and provided further*, that in the case the principal place of business of such corporation shall be removed out of this State, there shall be an agent of such corporation appointed in this State, in the county where its property is situated, upon whom all legal process may be served, and the failure of such corporation to appoint such agent shall subject it to a fine of fifty dollars per day, to be recovered in the name of the State of Nevada, as in other cases of fines and penalties.

PURCHASE OF ORE

Legal Owners

SECTION 1. Any persons, copartnership, association or corporation in the actual and peaceable possession of any mining claim, under claim or color of title, engaged in the mining, shipment and treatment, or sale of ores therefrom, shall, as to all persons purchasing such ore or ores in good faith and without notice, as herein provided, of the title or claim of title or ownership of any other person, copartnership, association or corporation thereto, be deemed to be the lawful owner or owners of such ore or ores.

Legal Purchasers

SEC. 2. Any person who, or copartnership, association or corporation which shall in good faith and in the usual course of business and without notice, as hereinafter provided, purchase and obtain delivery of any ore or ores from any person, copartnership, association or corporation in possession

of the mines, mining claim or claims, from which such ore or ores shall have been mined and extracted, shall be deemed the owner or owners of such ores except as herein provided; and he or they shall not be liable to, or subject to any action at law or in equity, for the recovery of the same or the value thereof, by any person, copartnership, association or corporation who or which may thereafter be adjudged to be the owner or owners of such mine, mines, mining claim or claims.

Disputed Title to Ore Mined

SEC. 3. If any person, copartnership, association or corporation shall be or shall claim to be the owner or owners, or entitled to the possession or enjoyment of any mine, mines, mining claim, claims or premises, then in the possession of some other person, co-partnership, association or corporation claiming to be the owner or owners or entitled to the possession thereof, and mining, shipping, and treating or selling the ore therefrom, may, if he, they, or it shall intend or desire to hold purchasers of or those intending to purchase such ore or ores, responsible for the value thereof, serve or cause to be served upon such purchaser or purchasers, or intending purchaser or purchasers, a notice in writing, which shall contain the name of the mine, mines, mining claim, claims or premises, the name of the person, copartnership, association or corporation claiming, or asserting ownership or right to the possession or enjoyment thereof, the name or names of the person, copartnership, association or corporation in possession of and mining, shipping and selling ore therefrom, and warning such purchaser or purchasers, or intending purchaser or purchasers, that he, they or it will be held liable and responsible for all ore or ores by him, them or it purchased and delivered or to be purchased and delivered from such mine, mines, mining claim, claims or premises by such person, copartnership, association or corporation, or his, their or its heirs, assigns or agents subsequent to the service of such notice. Within thirty days from and after the service of such notice, the person, copartnership, association or corporation serving or causing to be served the same, shall institute an action to enforce his, their or its title in some court of competent jurisdiction against the person, copartnership, association or corporation in possession of and mining and shipping ore from such mine, mines, mining claim, claims or premises, and to enjoin him, them, or it from the mining or shipment and sale of ores taken therefrom, pending such action, and at once notify such purchaser or purchasers or intending purchaser or purchasers of such ore or ores of the pendency of such action; *provided*, that if the notice hereinabove required shall be served after such an action shall have been instituted, it shall not be necessary to commence another under the provision hereof.

Title, When Waived

SEC. 4. If any person, copartnership, association or corporation claiming title to or right of possession of such mine, mines, mining claim, claims or premises, not having before then brought action, shall serve a notice upon any purchaser or purchasers or intending purchaser or purchasers of ore or ores, as provided in section three of this Act, and shall fail or neglect to institute an action as herein required, such notice shall be deemed to have been

waived, and the party or parties serving such notice shall be liable to the parties injured thereby in double damages including costs and reasonable attorney fees, and such purchaser or purchasers or intending purchaser or purchasers shall not be bound by anything therein contained.

Purchaser of Ore Responsible to Real Owner

SEC. 5. Any purchaser of ore or ores, who or which shall have received the notice herein provided for, and followed or preceded by the commencement of an action, as herein set forth, who shall purchase or continue to purchase and receive ores taken from the mine, mines, mining claim, claims or premises named therein, shall be liable and responsible for the value thereof to the person, copartnership, association or corporation who or which shall be ultimately adjudged or decreed to be the owner or entitled to the possession thereof.

[Statutes of 1907, p. 365.]

EMINENT DOMAIN FOR MINING PURPOSES

Right of Eminent Domain

SECTION 1. The production and reduction of ores are of vital necessity to the people of this State; are pursuits in which all are interested, and from which all derive a benefit; so the mining, milling, smelting, or other reduction of ores are hereby declared to be for the public use, and the right of eminent domain may be exercised therefor.

Lands for Such Purposes, How Acquired

SEC. 2. Any person, company, or corporation engaged in mining, milling, melting, or other reduction of ores, may acquire any real estate, or any right, title, interest, estate, or claim therein or thereto necessary for the purposes of any such business, by means of the special proceedings prescribed in this Act. The said special proceedings shall be substantially as follows: There shall be filed in the Clerk's office of the District Court in the county where the real estate is situated, a petition verified according to law, stating therein the name of the person, company, or corporation presenting the petition, that they are engaged in the business of mining, milling, smelting, or other reduction of ores as aforesaid, the description by the metes and bounds, or by some accurate designation of the tract or tracts of land desired to be appropriated for the purposes of such business, and that a necessity exists therefor, setting forth the names of those in possession of said lands, and of those claiming any right, title, or interest therein, so far as the same can be ascertained by reasonable diligence.

Defendants upon Petition, How Considered

SEC. 3. The persons in occupation of said tract or tracts of land, and those having any right, title, or interest therein, whether named in the petition or not, shall be defendants thereto, and may appear and show cause against the same, and may appear and be heard before the commissioners herein provided for, and in proceedings subsequent thereto, in the same manner as if they had appeared and answered said petition.

Hearing upon Petition

SEC. 4. The said court, or the Judge thereof, either in term or vacation, shall by order, appoint the time for the hearing said petition, and such hearing may be had, and all orders in said proceedings may be made by the said court or the Judge thereof, either in term time or vacation.

Notice of Pendency of Petition

SEC. 5. The petitioner shall cause all the occupants and owners of said tract or tracts of land, so far as the same can be ascertained by reasonable diligence, who reside in said county, to be personally notified of the pendency of the said petition at least ten days before the hearing thereof; and if any of said occupants or owners are unknown or do not reside in said county, and have not been personally notified of the pendency of said petition, such petitioner shall cause a notice, stating the filing of said petition, the object thereof, the tracts of land sought to be appropriated, and the time and place of the hearing of said petition, to be published for four successive weeks, previous to the time of hearing said petition, in a newspaper published in said county, or if none is published in said county, then in a newspaper published nearest to said county.

Hearing upon Petition. — Commissioners, How Selected

SEC. 6. The defendants to said petition may appear and show cause against said petition on or before the time for the hearing thereof, or such other time as the hearing may be continued to; and upon satisfactory proof being made that the defendants have been duly notified of the pendency of said petition, as herein prescribed, and upon the hearing of the allegations and proofs of the said parties, if the said court or Judge shall be satisfied that the said lands or any part thereof, are necessary or proper for any of the purposes mentioned in said petition, then such court or Judge shall appoint three competent and disinterested persons as commissioners, one of whom shall be selected from among the persons, if any, named for that purpose by said petitioner, and one shall be selected from among the persons, if any, named on the part of any of the defendants, to ascertain and assess the compensation to be paid to any person or persons having or holding any right, title, or interest in or to each of said tracts of land, for and in consideration of the appropriation of such land to the use of said petitioner. If any vacancy occur among said commissioners, by reason of any one or more of them refusing or neglecting to act, or by any other means, one or more commissioners may be appointed by said court or Judge to fill such vacancy, upon notice being given of such vacancy, as said court or Judge may direct.

Meetings of Commissioners

SEC. 7. The said court or Judge shall appoint the time and place for the first meeting of said commissioners and the time for filing their report, and may give such further time as may be necessary for that purpose, if they shall not then have completed their duties. The said commissioners, or a majority of them, shall meet at the time and place, as ordered, and before entering on their duties shall be duly sworn to honestly, faithfully and impar-

tially perform the duties imposed upon them; and anyone of them may issue subpenas for witnesses for either of said parties, and may administer oaths; and said commissioners may adjourn from place to place, and from time to time, as may be necessary for the proper discharge of their duties.

Powers and Duties of Commissioners. — Claims to Compensation Assessed, How Asserted

SEC. 8. The said commissioners shall proceed to view the several tracts of land, as ordered by said court or Judge, and shall hear the allegations and proofs of said parties, and shall ascertain and assess the compensation for the land sought to be appropriated to be paid by said petitioner to the person or persons having or holding any right, title or interest in or to each of the several tracts of land; and such commissioners shall, on or before the time or times as ordered by said court or Judge, file in said Clerk's office their report, signed by them, or a majority of them, setting forth their proceedings in the premises; and they may include all of said tracts in one report, or they may make several reports, including one or more of said tracts of land, if the court or Judge shall so order, or if they shall deem it proper. In case there are adverse or conflicting claims to the compensation assessed for any tract of land, or any right, title or interest therein thus sought to be appropriated, the parties thus asserting such claim shall present the same by petition to the court or Judge after the report of the commissioners shall have been filed, and the said court or Judge shall proceed to hear and determine the same; and in such cases said petitioner may pay the amount of such compensation to the Clerk of said court, to abide the order of the court or Judge in said proceedings, and said petitioner shall not be liable for any of the costs caused by the adjudication of such conflicting claims.

Objections to Report, How Made and Heard

SEC. 9. The said petitioner, or any of said defendants, if dissatisfied with the report, may within twenty days after the time of filing said report, and after ten days' notice to the parties interested, move to set aside the report, and to have a new trial as to any tract of land, on good cause shown therefor, and the said court or Judge shall set aside the report as to such tract of land, and may recommit the matter to the same or to other commissioners, who shall be ordered to proceed in like manner as those first appointed; but such matter shall not be more than twice recommitted to commissioners.

Report, When to be Confirmed

SEC. 10. Upon the expiration of twenty days after the filing of said report or reports, or at such further time as may be appointed therefor, if the motion and notice shall not have been made and given as aforesaid, and if the proceedings of said commissioners appear to have been correctly and properly done, the said court or Judge shall confirm each of said reports and certify the same thereon.

Reports to be Recorded. — Orders by Judge. — Costs, etc.

SEC. 11. Each of said reports and the certificates thereon, upon the compensation therein named being paid, shall be recorded in the Recorder's

office of said county by said petitioner. The said court or Judge may make all such orders as may be necessary or proper in the special proceedings provided for in this Act, and shall cause the pleadings and proceedings to be amended whenever justice shall require it to be done, and shall direct the manner of the service of all orders and notices not herein specially provided for. Costs in such special proceedings shall be taxed by the Clerk at the rates prescribed in the fee bill for said county in civil actions, and also the compensation of the commissioners which shall be fixed by the court or Judge, and shall be paid by said petitioner, except in case where a defendant shall move for a new trial, and the compensation assessed by the commissioners shall not be increased more than ten per cent upon the previous assessment, in which case such defendant shall pay the costs.

Defective Title, New Proceedings Thereon. — Petitioner Entitled to Possession

SEC. 12. If the title attempted to be acquired by virtue of the provisions of this Act shall be found to be defective from any cause, such petitioner may again institute proceedings to acquire the same, as in this Act prescribed, and at any stage of such new proceedings, or of any proceedings under this Act, the court or Judge in chambers may rule, or by order in their behalf made, authorize such petitioner, if already in possession, to continue in the use and possession, and if not in possession, to take possession of and use such premises during the pendency of and until the final conclusion of such proceedings, and may stay all actions and proceedings against such petitioner on account thereof, provided such petitioner shall pay a sufficient sum into court, or give security, to be approved by such court or Judge, to pay the compensation in that behalf when ascertained.

Petitioner Acquires the Land

SEC. 13. Upon the filing of the report of the commissioners for record as above provided for, and upon the payment or tender of the compensation and costs as prescribed in this Act, the real estate, or the right, title, or interest therein described in such report, shall become the property of said petitioner for the purpose of the business of mining, milling, smelting or other reduction of ores as aforesaid, so long as the same shall be continued, and shall be deemed to be acquired for and appropriated to public use.

Payments to be Made, When

SEC. 14. Such petitioner shall, within thirty days after the final confirmation of the report aforesaid, pay or tender the sum of money ascertained and assessed by said commissioners as and for the compensation of each tract of of land described in said report of which the compensation was ordered by said court or Judge to be ascertained and assessed as aforesaid; and said payment or tender may be made to the person or persons owning said tract of land, or having or holding any right, title or interest therein, according to the amount or extent of the right, title or interest owned or held therein by such person or persons; or said payment may be made to the said Clerk for said persons, and the same shall be deemed and taken as payment to such person

or persons, and shall be as effectual for all purposes as if the said sum of money had been personally paid to each and all of the persons entitled thereto.

Realty of Incompetent Persons, How Acquired. — Voluntary Sale

SEC. 15. If it shall become necessary for any of the purposes aforesaid for such petitioner to acquire any real estate, or any right, title or interest therein, which is the property of any infant, idiot, or insane person, the guardian, executor, or administrator, as the case may be, shall be subject to process, judgment and decree as herein provided for persons of full age, or capable of contracting, or without such process, judgment or decree, they may sell and convey the property desired to said petitioner; but neither such sale or conveyance shall be valid for any purpose until the same shall have been approved by the Judge of the proper court, and said Judge is hereby authorized to examine such deeds and conveyances, and if he shall deem the same just and proper, he shall approve the same, and thereupon such conveyances shall have the same force and effect for the purposes in this section mentioned as if the same had been executed by persons competent to convey lands in their own names.

Payment to Person Entitled

SEC. 16. The said court or Judge shall, at the time of the payment of any sum of money to the said Clerk under the provisions of this Act, or at such other times or time as may be ordered, direct and order the same to be paid over to the person or persons who shall upon satisfactory proof appear to be entitled thereto.

Term "Person" Defined

SEC. 17. In all the proceedings in relation to the sale or appropriation of real estate, and ascertaining and receiving the compensation therefor, for the purposes as prescribed in this Act, the term "person" shall be deemed to include municipal or other corporations, and the word "petitioner" to designate any person or number of persons, company or corporation who may in any case petition as provided in this Act.

SEC. 18. The minutes of the proceedings had before such Judge shall be entered by said Clerk, in the same manner and with the same force and effect, as if the proceedings were had before the said court in term time.

[The Legislature of 1907 passed an elaborate law concerning the exercise of the law of Eminent Domain which is too long to be given here. Paragraphs 4, 5, 6 and 10 of Sec. 1, enumerating objects for which the right may be exercised that relate directly to mining are given herewith. If the obtaining of the rights granted is contemplated, it will be necessary to secure legal advice and assistance. This statute of 1907 is in addition to the special provisions for use of Eminent Domain for Mining Purposes, given above, which remain unrepealed.]

SEC. 4. Wharves, docks, piers, chutes, booms, ferries, bridges, toll roads, by-roads, plank and turnpike roads, roads for transportation by traction engines or road locomotives, roads for logging or lumbering purposes, and railroads and street railways for public transportation.

5. Reservoirs, dams, water-gates, canals, ditches, flumes, tunnels, aqueducts, and pipes for supplying persons, mines, mills, smelters, or other works for the reduction of ores, with water for domestic or other uses, or for irrigating purposes, or for draining and reclaiming lands, or for floating logs and lumber on streams not navigable.

6. Roads, railroads, tramways, tunnels, ditches, flumes, pipes and dumping places to facilitate the milling, smelting, or other reduction of ores, or the working of mines, and for all mining purposes; outlets, natural or otherwise, for the deposit or conduct of tailings, refuse, or water from mills, smelters or other works for the reduction of ores, or from mines, mill dams, natural gas or oil pipe lines, tanks or reservoirs, also an occupancy in common by the owners or possessors of different mines, mills, smelters, or other places for the reduction of ores, of any place for the flow, deposit, or conduct of tailings or refuse matter; also necessary land upon which to erect smelters and to operate the same successfully, including deposition of flue dust, fumes and smoke.

. . . . . .

10. Canals, reservoirs, dams, ditches, flumes, aqueducts, and pipes for supplying and storing water for the operation of machinery, for the purpose of generating and transmitting electricity for power, light or heat.

Prospector May Enter Private Land

Responsible to Owner for Damage Done

Section 1. Any person, a citizen of the United States, may enter upon any unfenced and unimproved land in the State of Nevada held in private ownership, except mining claims and mining property already located or occupied for mining purposes, and may prospect thereon for gold, silver or other valuable minerals or metals, being responsible to the owner of the land for all damage done thereon.

May Locate Mineral Deposit

Sec. 2. Any person, a citizen of the United States, discovering a ledge or deposit containing gold, silver or other valuable mineral or metals in or upon any unfenced and unimproved land in this State, held in private ownership, excepting mining claims or mining property already located or occupied for mining purposes, may locate such ledge or deposit, in accordance with the laws of the United States and of this State in respect to the location of mining claims, the same as though such ledge or deposit was found upon the public domain, and may acquire title to such land so located by means of the special proceedings prescribed in this Act. The said special proceedings shall be substantially as follows: There shall be filed in the Clerk's office of the District Court in the county where the real estate is situated a petition verified according to law, stating therein the names of the person or persons presenting the petition; that he or they have discovered a ledge or deposit containing gold, silver, or some other valuable mineral or metal; the description by metes and bound, or by some other accurate designation of the tract or tracts of land, located in the manner of mining claims as herein provided and desired to be appropriated for mining purposes; that said land is more

valuable for mining purposes than the purpose for which the same is being held; the names of those in possession of said land, and those claiming any right, title, or interest therein, so far as the same can be obtained by reasonable diligence.

Method of Proceeding Prescribed

SEC. 3. That the proceedings following the filing of such petition shall be as prescribed in that certain Act of the Legislature of this State entitled "An Act to encourage the mining, milling, smelting or other reduction of ores in the State of Nevada," approved March 1, 1875, in so far as the same are not inconsistent with the provisions of this Act.

Title, How Acquired

SEC. 4. If upon the hearing of the petition filed as provided in this Act it appears to the satisfaction of the court or Judge thereof that the land in question is more valuable for mining than the purpose for which the same is being used, then the petitioner or petitioners shall acquire title thereto in manner similar to that prescribed in the Act to which this Act is supplementary.

Basis for Determining Value of Land

SEC. 5. In determining the value of the land as a basis for the compensation which the petitioner or petitioners shall pay to the owners thereof, the minerals therein contained shall not be considered as going to make up the value, but the value which shall govern is the reasonable value of the land for the use to which the same has previously been put, or reasonably might be expected to be put in the future, by the owners thereof.

[Statutes, 1907, p. 140.]

MINER MAY ENTER AGRICULTURAL OR GRAZING LAND

Proviso

SECTION 1. Any person now legally occupying and settled upon, or who may hereafter occupy or settle upon, any of the public lands in this State, for the purpose of cultivating or grazing the same, may commence and maintain any action for interference with, or injuries done to, his or her possession of said land, against any persons or person so interfering with or injuring such land or possession; *provided*, that if the lands so occupied and possessed contain mines of any of the precious metals, the possession or claim of the person or persons occupying the same, for the purposes aforesaid, shall not preclude the working of such mines by any person or persons desiring so to do, as fully and unreservedly as they might or could do had no possession or claim been made for grazing or agricultural purposes.

May Enter upon Mineral Lands. — Compensation for Injury

SEC. 2. The several grants made by the United States to the State of Nevada reserved the mineral lands. Sales of such lands made by the State were made subject to such reservation. Any citizen of the United States, or person having declared his intention to become such, may enter upon any mineral lands in this State, notwithstanding the State's selection, and

explore for gold, silver, copper, lead, cinnabar, or other valuable mineral, and upon the discovery of such valuable mineral, may work and mine the same in pursuance of the local rules and regulations of the miners and the laws of the United States; *provided*, that after a person who has purchased land from the State has made valuable improvements thereon, such improvements shall not be taken or injured without full compensation. But such improvements may be condemned for the uses and purposes of mining in like manner as private property is by law condemned and taken for public use. Mining for gold, silver, copper, lead, cinnabar, and other valuable minerals is the paramount interest of this State, and is hereby declared to be a public use.

[Statutes 1887, p. 102.]

State Disclaims Interest in Mineral Lands

SEC. 3. Every contract, patent, or deed hereafter made by this State or the authorized agents thereof, shall contain a provision expressly reserving all mines of gold, silver, copper, lead, cinnabar and other valuable minerals that may exist in such land, and the State, for itself and its grantees, hereby disclaims any interest in mineral lands heretofore or hereafter selected by the State on account of any grant from the United States. All persons desiring titles to mines upon lands which have been selected by the State must obtain such title from the United States, under the laws of Congress, notwithstanding such selection.

[Statutes 1897, p. 36.]

TRESPASS ON PATENTED MINING GROUND

Trespassing a Misdemeanor

SECTION 1. Any person or persons knowingly and unlawfully trespassing upon any mining ground for which a United States mineral patent has been issued shall be guilty of a misdemeanor.

Misdemeanor to Interfere with Working of Patented Mines. — Penalty

SEC. 2. Any person or persons knowingly and unlawfully entering and trespassing upon any mining ground for which a United States mineral patent has been issued, and removes therefrom any soil, substance, or mineral of any kind or character whatever, or interferes in any manner with the workings of said patented mine, or places in any shaft, cut, tunnel or workings of said patented mine any obstructions to the development or free use and occupancy of the same by the lawful owners or their legal agents or representatives, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in the sum of three hundred dollars, or imprisoned in the county jail for the term of six months, or by both such fine and imprisonment.

Applies to Esmeralda County

SEC. 3. The provisions of this Act shall only apply to counties that cast between 400 and 425 votes for Members of Congress, at the general election held in 1900.

[Statutes 1901, p. 118.]

MINERAL LAND COMMISSIONER

Office Created

SECTION 1. The office of Mineral Land Commissioner is hereby created.

Duties Defined

SEC. 2. It shall be the duty of the Mineral Land Commissioner to examine all applications for patents of the public lands of this State or of the United States, except mining claims, and to make an abstract of such application which shall contain the name of the applicant, the location of the land applied for to be patented, by legal subdivisions, with the section, township, and range, the date of entry of the applicant, and the character of such entry. After obtaining the above information, the Mineral Land Commissioner shall immediately commence an inquiry, or cause an inquiry to be commenced, to ascertain:

First — If any of the land for which a patent is applied is located within any mining district or known mineral belt.

Second — If the same, or any portion thereof, has at any time been held, used, claimed or worked for minerals of any kind or character, and for these purposes he may make application to any State or county officer of this State, who shall proceed forthwith to furnish such information to said Commissioner, and he shall publish a notice of such application in some newspaper nearest the land applied for.

Third — If it shall be ascertained, or if the Mineral Land Commissioner has reason to believe that the said land so applied for is mineral in character, or contains mineral in quantities sufficient to support a *bona fide* mining location, then it shall be the duty of the Mineral Land Commissioner to appear in the State Land Office, or in the United States Land Office, as the case may be, and contest such application, and for this purpose he shall have power to produce witnesses, and offer evidence in support of the contest, showing that the land applied for is more valuable for mineral than for any other purpose.

Any Person May Furnish Information

SEC. 3. Any person having knowledge of the existence of minerals on any portion of the public domain belonging to the State or to the United States for which a patent is applied, may lodge such information before the Mineral Land Commissioner, with the request that said Commissioner appear as the attorney for such person and contest the application for such patent, either in his own name or in the name of any person who may request to be entered as a contestant for such application, and it shall be the duty of the said Commissioner to appear and act as such attorney and contest such application.

Commissioner to keep Record

SEC. 4. The Mineral Land Commissioner shall keep a record of all actions or contests so instituted, either in his own name, or as the attorney for any other person, and shall carefully preserve and file copies of all evidence, data, plats, and other information, and shall on or before the first day of January of each year make and submit his report to the Governor, showing the number of applications contested by him, where the land is located, and the

character of the minerals alleged to be contained herein, with such other and further information as he may deem necessary.

Deputies may be Appointed. — Salary of Commissioner. — No Fees

SEC. 5. The Mineral Land Commissioner may appoint as many deputies as he may deem necessary for the carrying out of the provisions of this Act. All fees or charges of such deputies shall be paid out of the salary herein provided for the Mineral Land Commissioner. The Mineral Land Commissioner shall receive a salary of twenty-five hundred dollars per annum, payable in equal monthly instalments, the same as the salaries of other officers of the State are paid, and the State Controller is hereby authorized to draw his warrant and the State Treasurer is hereby directed to pay the same out of any money not otherwise than especially appropriated. The State Mineral Land Commissioner shall make no charge nor shall he receive any other fee than the salary herein provided.

Attorney-General to be Ex-Officio Mineral Land Commissioner

SEC. 6. The Attorney-General of this State is hereby made ex-officio Mineral Land Commissioner.

SEC. 7. In the event of the lawful appointment of a State Mineralogist, it shall be the duty of said State Mineralogist to furnish to the Mineral Land Commissioner, upon his written request therefor, the information and data, specified in Section 2 of this Act, and if necessary, or desired, any such other information relative thereto that said State Mineralogist may, by diligent search and inquiry, be able to ascertain.

[Statutes of 1907, p. 39.]

NEW MEXICO

GENERAL TERRITORIAL MINING LAW

[The section numbers given are those of the compiled Laws of New Mexico, 1897]

Requirements of a Location

SECTION 2286. Any person or persons desiring to locate a mining claim upon a vein or lode of quartz or other rock in place bearing gold, silver, cinnabar, lead, tin, copper or other valuable deposit, must distinctly mark the location on the ground so that its boundaries may be readily traced, and post in some conspicuous place on such location, a notice in writing stating thereon the name or names of the locator or locators, his or their intention to locate the mining claim, giving a description thereof by reference to some natural object or permanent monument as will identify the claims; and also within three months after posting such notice, cause to be recorded a copy thereof in the office of the recorder of the county in which the notice is posted. *And provided,* no other record of such notice shall be necessary.

Recording Location Certificates

SEC. 2287. In order to carry out the intent of the preceding section, it is hereby made the duty of the probate clerk of the several counties of this Territory, and they are hereby required to provide at the expense of their

respective counties such book or books as may be necessary and suitable in which to enter the record hereinbefore provided for. The fees for recording such notices shall be ten cents for every one hundred words.

Ejectment

SEC. 2289. An action of ejectment will lie for the recovery of the possession of the mining claim, as well also of any real estate, where the party suing has been wrongfully ousted from the possession thereof, and the possession wrongfully detained.

Suit by Contestant

SEC. 2290. That when an application is made for a patent to a mine or mining claim under the laws of the United States by any person, persons, company or corporation claiming to own or have an interest therein, and such application is contested by any other person, persons, company or corporation in the land office of the United States, such person, persons, company or corporation so contesting, may bring suit of ejectment in the district court of the county in which the mine or mining claim is situated for the recovery of the same, whether in or out of possession of such mine or claim, and the question as to who was in the possession of the mine or claim at the time when the application was made for patent, or when the suit was begun, shall not be considered by the court, except as it may be necessary in determining the interests of the respective claimants, and their right to the possession of said mine or claim.

Special Verdict — Trespass

SEC. 2291. The court, in an action for the recovery of a mine or mining claim where a patent is applied for, and the contest is pending in the Land Office of the United States, may, upon motion of either party to the suit, require the jury to return a special verdict, if tried by a jury; if not, then the judge trying the same shall make a special finding as to the particular interest each party owns in the mine or claim in dispute, under and by virtue of the mining laws of the United States, which special verdict or finding shall be entered into the judgment and upon the record of the court trying the same: *Provided, however*, There shall be no special verdict by the court or jury, except where the evidence shows both parties to the suit to have a *bona-fide* interest in the mine or claim sued for: *And, provided further*, That no third person who may have entered upon such mining claim or any part thereof, for the purpose of locating or claiming the same before or during such litigation in the district court growing out of any contest in any United States land office in this Territory, shall acquire any interest either at law or in equity in the claim or any part thereof in dispute, and shall be deemed and declared a trespasser or trespassers, unless he or they have been, or may, during the pendency of such litigation in the district court resulting from such contest in the United States Land Office, by a proper application to the court, be made party or parties to such suit adverse to either of such litigants, or both, or shall have taken such legal steps to assert his or their claim in a court of competent jurisdiction within six months after the commencement of such contest in the United States Land Office.

Work During Pendency of Suit

SEC. 2292. That nothing herein shall prohibit the working and developing of a mine or mining claim by either party in interest who may be in possession of the mine or claim during the pendency of the suit, nor shall this act prohibit any one from bringing an action for damages or a suit in equity to prevent waste. This act shall apply to any and all suits for the recovery of a mine or mining claim which are now or are hereafter commenced.

Measuring or Surveying During Suit

SEC. 2293. In all actions at law, or suits in equity, now pending in any of the district courts of this Territory, or hereafter commenced in such courts, wherein the title or right of possession to any mining claim, or ores and minerals is in dispute, any party to such action or suit shall have the right to go upon or enter the workings of said mining claim for the purpose of measuring or surveying the same, either upon the surface or in the workings thereof, peaceably, and without molestation; the costs and expenses of such measurement or survey to be paid by the party for whose use and benefit the same was done.

Who Shall Survey

SEC. 2294. The right to go upon and enter said mining claim shall be extended to the party applying therefor, as well as a surveyor and two chain carriers.

Notice of Survey

SEC. 2295. Before any person may enter upon or go into the workings of such mine without the consent of the person or corporation in possession, he shall give not less than five days' notice in writing to such person in possession or to his agent or manager, and if the possession is held by a corporation, said notice shall be served upon the president, agent or manager of such corporation, or upon the foreman in charge of the mine, that at a certain date, specified in said notice, he desires to enter upon or go into the workings of said mine, as the case may be, for the purpose of surveying and taking a measurement of the same, in order that he may be able to present the facts on the trial.

Court Proceeding on Refusal of Survey

SEC. 2296. If such person or corporation shall not permit any party in interest in such suit or action to go upon or enter said mine, as contemplated in the preceding sections, after having been notified in the manner designated, the court may, upon proper showing, verified by affidavit or otherwise, exclude all evidence offered on the trial by the party so refusing, to [and] render judgment or decree in favor of the party giving such notice: *Provided*, That the court may, in its discretion, make an order directing the sheriff to go upon the ground with the party applying for the measurement and survey of such mine, and place the person so applying in possession, for the purpose of measuring and surveying the same, in which case the court may direct the payment of costs as may be just and proper.

Survey as Evidence

SEC. 2297. The competency, relevancy and effect of such survey and

measurement, as evidence, shall be governed by the ordinary rules of evidence in civil cases.

Discovery Shaft or Equivalent

SEC. 2298. That the locator or locators of any mining claim, located after this act shall take effect, shall, within ninety days from the date of taking possession of the same, sink a discovery shaft upon such claim, to a depth of at least ten feet from the lowest part of the rim of such shaft at the surface, exposing mineral in place, or shall drive a tunnel, adit, or open cut upon such claim, to at least ten feet below the surface, exposing mineral in place.

Boundaries — How Marked

SEC. 2299. The surface boundaries of mining claims hereafter located shall be marked by four substantial posts or monuments, one at each corner of such claim, on the ground, so that its boundaries can be readily traced, and shall otherwise conform to Section 2286. *As amended March 16, 1899.*

Relocation — How Made

SEC. 2300. The relocation of any mining ground, which is subject to relocation, shall be made in the same way as an original location is required by law to be made, except the relocator may either sink a new shaft upon the ground relocated to the depth of at least ten feet from the lowest part of the rim of such shaft at the surface, exposing mineral in place, or drive a new tunnel, adit, or open cut upon such ground at least ten feet below the surface, exposing mineral in place, or the relocator may sink the original discovery shaft ten feet deeper than it is at the time of relocation, or drive the original tunnel, adit, or open cut upon such claim ten feet further.

Amended or Additional Location

SEC. 2301. If at any time the owner of any mining claim heretofore or hereafter located, or his assigns, shall apprehend that the original notice of location is defective, erroneous or the requirement of law has not been complied with before filing; or shall be desirous of changing his surface boundaries or to take in any part of an overlapping claim which has been abandoned, or in case the original notice of location was made prior to the passage of this act and the owner shall be desirous of obtaining the benefits of this act, such owner may file in the office where notices of location are by law required to be filed, an amended or additional notice of location, subject to the provisions of this act: *Provided*, That such additional or amended notice of location does not interfere with the existing right of others at the time of filing such notice; and no such amended or additional location, or record thereof, shall preclude the claimant or his assigns from proving any such title as he or they may have held under the previous location.

Destroying Location Notices

SEC. 2302. Any person who shall take down, remove, alter or destroy any stake, post, monument or notice of location upon any mining claim without the consent of the owner or owners thereof, shall be deemed guilty of a misdemeanor, and on conviction shall be punished by a fine not exceeding one

hundred dollars or by imprisonment in the county jail not exceeding six months, or by both such fine and imprisonment.

Abandonment, How Evidenced — Liens Protected

SEC. 2303. In addition to the provision of law now in force in respect to the abandonment of mining claims, they may be abandoned in the following manner: The owner or owners of any mining claim, wishing to abandon the same, may sign and acknowledge in the same manner provided by law for the acknowledgment of deeds, and file for record in the office of the county recorder, a certificate describing the same, stating when and by whom located, the name of the claim, the book and page where the notice of location of such claim is recorded; that he or they give up and abandon such claim, and that the same is open and subject to relocation. Upon the filing of such certificate, the mining claim therein described shall be considered abandoned and open to relocation as if the same had never been located, and the owner or owners thereof forever stopped from claiming any right or interest therein under the location mentioned in said certificate: *Provided*, That this provision for abandonment shall not apply to any claim or location upon which any mortgage, lien or other incumbrance exists.

Liens — How Protected

SEC. 2304. When the owner or owners of any mining claim or claims now located or which may hereafter be located, upon which there shall exist any mortgage, miner's or mechanic's lien, or other encumbrance of any kind which may be hereafter made or incurred, shall refuse, neglect, or fail, up to the first day of December of any year, to perform thereon the annual labor or make thereon the annual expenditure required by law to be made in order to prevent the same from becoming open to relocation, in such case the holder or owner of such mortgage lien or encumbrance may, upon the first day of December of such year or any time thereafter, before any such mining claim or claims shall have been relocated, enter with his or their workmen and employés upon the same and perform, or cause to be performed, the one hundred dollars' worth of labor or make the one hundred dollars' worth of improvements upon such claim or claims as by law required to be done or made each year in order to prevent such claim or claims from becoming open to relocation; that such work shall be done and improvements made in a workmanlike manner; that for the purpose of performing or causing to be performed such labor and improvements, the holder or holders of such mortgage, miner's or mechanic's lien, or other encumbrance, shall be considered the agent or the agents of the owner or owners of such mining claim or claims; that the owner or owners of such mining claim or claims, or any other person or persons, shall not in any manner prevent, obstruct, hinder, or delay the performance of any labor or the making of such improvements, and may be restrained from so doing by injunction; that upon the completion of the one hundred dollars' worth of labor or improvements by the holder or holders of any mortgage, miner's or mechanics' lien or other encumbrance as aforesaid, upon any mining claim, as herein provided, all sum or sums of money expended by him or them shall be and become a lien upon the said mining claim or claims, and from the date of the completion of the same

draw the same rate of interest as the principal sum of such mortgage, miner's or mechanic's lien, or other encumbrance, and may be foreclosed according to law.

Punishment for Obstructing Certain Work

SEC. 2305. Any person or persons who shall prevent, obstruct, hinder or delay the performance of the labor or the making of the improvements mentioned in the last preceding section of this act, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than one hundred dollars, or over five hundred dollars, or by imprisonment in the county jail for a period not less than six months, nor more than one year, or by both fine and imprisonment.

Rights of Stockholders

SEC. 2306. Any person owning stock in any corporation or company owning or operating mines in this Territory shall at any time during the business hours of the day have the right to enter in and upon any and all mines of such corporation or company, and all underground workings connected therewith for the purpose of examining the same.

Punishment for Refusal to Stockholder

SEC. 2307. Every corporation or company or officer or agent of such corporation or company who shall refuse to allow upon demand any person owning in such corporation or company, to enter such mines, as provided in section two thousand three hundred and six, shall be guilty of a misdemeanor, and the corporation or company shall forfeit and pay to the party injured a penalty of one hundred dollars for every such refusal, and all damages resulting therefrom.

Definition of Stockholder

SEC. 2308. Whenever the words Any person owning stock occur in the above section, they shall be taken and considered to mean stockholders whose names appear on the stock book of the company as owners of stock, and none others.

Punishment for Defacing Location Notice

SEC. 2311. Any person or persons, or the manager, officer, agent or employé of any person, firm, corporation or association, who shall in any manner alter, deface or change the location notice of any mining claim in this Territory, located under the laws of the United States and of this Territory, or any local regulations in force in the district wherein such claim is situated, thereby in any manner affecting the rights of any person, firm or corporation, to such claim or location, or the land covered thereby, shall be deemed guilty of a misdemeanor, and upon conviction thereof before any court of competent jurisdiction shall be fined in a sum not less than one hundred dollars, nor more than five hundred dollars, or imprisoned in the county jail for not less than sixty days, nor more than one year, or by both such fine and imprisonment in the discretion of the court trying the case. Nothing herein contained shall affect the rights of such locator or locators, and his or their assigns, to correct errors in such notice and file amended location notices as provided in section two thousand three hundred and one, and the laws of the United

States: *Provided*, Such change shall not affect or change the date of such location notice, or affect the rights of any other person.

Punishment of Certain Persons for Fraudulent Relocation

SEC. 2312. Any person or persons, or the manager, officer, agent or employé of any person, firm or corporation, who shall, either by himself or acting in collusion with others, relocate or attempt to relocate, or procure, or become interested, directly or indirectly in, and the relocation of, or in any manner attempt to hold possession of any forfeited mining claim, contrary to the provisions of this act, or who shall locate, or in any manner become interested in the location of any other claim which shall include the whole, or any portion of the ground covered by such forfeited claim, contrary to this act, shall be deemed guilty of a misdemeanor, and upon conviction thereof before any court of competent jurisdiction shall be subject to the same penalty and punishment as provided in section two thousand three hundred and eleven.

Trespass — Court Proceedings

SEC. 2313. When any person, firm or corporation shall be lawfully and peaceably in possession of any mining claim in this Territory, and shall have complied with all the requirements of law and regulations in force in the district in which said mining claim is situated, such persons, firm or corporation shall be deemed to be the rightful possessor of such mining claim and of the land included therein; and any person or the officer, agent or employé of any corporation who shall by force, intimidation, fraud, or stealth, or in the temporary absence of the rightful possessor, enter upon such mining claim with intent to hold the same, or any part thereof, against the rightful possessor, shall be considered a trespasser, and the judge of the district court for the district in which such claim is situated shall, upon the proper showing of such facts made by affidavit or by oral testimony upon a hearing ordered for that purpose, and upon the filing with the clerk of said district court of a good and sufficient bond, grant an order to show cause why a writ of injunction should not issue, enjoining and restraining such trespasser, his servants, agents and employés, and any person associated with him, from in any manner interfering with the rightful possessor in the possession of such claim until the final disposition of said cause.

SEC. 2314. The owner or owners of lands within this Territory, the title to which has been vested by letters patent from the United States Government, may make and file in the office of the county clerk of the county in which such lands are situated, such rules and regulations, not inconsistent with the laws of the United States and of this Territory, as they may see fit, governing the location and acquisition of mining claims thereon, which rules and regulations when so filed shall be binding upon all parties, and a copy thereof duly certified by the county recorder shall be received and admitted as evidence in any suit or proceedings relating to such mining claims; such rules and regulations may be changed and supplemented from time to time by other rules and regulations filed in like manner, providing that such change shall not affect rights acquired prior thereto.

Affidavit of Work Done

SEC. 2315. The owner or owners of any unpatented mining claim in this

Territory, located under the laws of the United States and of this Territory, shall, within sixty days from and after the time within which the assessment work required by law to be done upon such claim should have been done and performed, cause to be filed with the recorder of the county in which such mining claim is situated an affidavit setting forth the time when such work was done, and the amount, character and actual cost thereof, together with the name or names of the person or persons who performed such work; and such affidavit, when made and filed as herein provided, shall be *prima facie* evidence of the facts therein stated. The failure to make and file such affidavit as herein provided shall, in any contest, suit or proceedings touching the title to such claim, throw the burden of proof upon the owner or owners of such claim to show that such work has been done according to law.

Stealing Ores

SEC. 2316. Any person wrongfully extracting or carrying away or concealing or selling or attempting to sell ores from any mine, being the property of another, shall be deemed guilty of felony, and on conviction thereof shall be punished as for grand larceny, and the defendant or defendants shall be liable to the owner or owners of said ore for the value thereof recoverable by an action at law.

Purchase of Stolen Ore

SEC. 2317. Any person or persons who shall knowingly purchase, or contract to purchase or make any payment for, or on account of, any ore which shall have been wrongfully extracted or stolen from any mine, shall be considered an accessory after the fact to the unlawful extracting or stealing of such ore, and upon conviction shall be subjected to the same punishment to which the principals may be liable.

Record of Ores Delivered

SEC. 2318. That every person, association or corporation that shall be engaged in the business of milling, sampling, concentrating, reducing, shipping or purchasing ores in the Territory of New Mexico shall keep and preserve a book, in which shall be entered at the time of the delivery of each lot of ore: 1st, the name of the party on whose behalf such ore is delivered as stated; 2d, the name of the teamster, packer, or other persons actually delivering such ore, and the name of the owner of the team or pack train delivering such ore; 3d, the weight or amount of each lot of ore; 4th, the name and location of the mine or claim from which it shall be stated that the same had been mined or procured; 5th, the date of delivery of any and all lots or parcels of ore.

Access to Record of Delivery

SEC. 2319. Whenever affidavit shall have been made before any justice of the peace or notary public in any county in this Territory by any person, that ore has been stolen from him, stating as near as may be the amount and value of the ore stolen, such person, upon presentation of a certified copy of such affidavit, shall have access to such books, and may examine the entries which may have been made therein during a period of twelve months next preceding the filing of such affidavit.

Failure to Keep Record and Allow Access

SEC. 2320. Every person, association or corporation that shall fail or refuse to keep the book required by the terms of section two thousand three hundred and eighteen, or shall fail or refuse to make any proper entry therein, or who shall refuse to any person who may be entitled to the same, as provided by section two thousand three hundred and nineteen, the right of inspection thereof, shall forfeit and pay for each and every violation of the provisions of said section, a penalty of not less than fifty, nor more than three hundred dollars, to be collected by action of debt at the suit of any person who may have made the necessary affidavit provided for in section two thousand three hundred and nineteen to entitle such person to access to such books. In addition to said penalty, any person, association or corporation violating the provisions of the said section two thousand three hundred and eighteen, shall be liable at the suit of the party or person aggrieved, in the proper form of action, for all damages which may accrue to any party or person by reason of any such violation. And in all actions the fact that a false entry has been made shall be *prima facie* evidence that the same was made wilfully or knowingly.

Failure to Keep Proper Record

SEC. 2321. If any person, association or corporation shall fail or neglect to make the inquiries necessary to the making of the proper entries in said book as provided by section two thousand three hundred and eighteen, or shall so negligently make entries therein that any lot of ore cannot be particularly identified, or so negligently that it cannot be perceived therefrom what person delivered any lot of ore or received the proceeds of the same when purchased, or shall fail to keep such book or shall wilfully suffer the same to be lost or mislaid, so that the same cannot be produced for inspection, such failure or neglect shall not excuse any party defendant in any suit brought under the preceding section from judgment for any penalties prescribed by said section.

Accessory to Unlawful Holding

SEC. 2322. Any person, association or corporation, or the agent of any person, association or corporation who shall knowingly purchase or contract to purchase, or shall make any payment for or on account of any ore which shall have been taken from any mine or claim, by any person or persons who have taken or may be holding possession of any such mine or claim contrary to law, shall be considered as accessory after the fact to the unlawful holding or taking of such mine or claim, and upon conviction shall be subjected to the same punishment to which the principals may be liable.

False Weights

SEC. 2323. Any person, association or corporation, or the agent of any person, association or corporation engaged in the business of milling, sampling, concentrating, reducing, shipping or purchasing ores, as aforesaid, who shall keep or use any false or fraudulent scales or weights for weighing ore, or who shall keep or use any false or fraudulent assay scales or weights for ascertaining the assay value of ore, knowing them to be false, every person so offending shall be deemed guilty of a misdemeanor, and on conviction

thereof shall be fined in a sum not exceeding one thousand dollars, nor less than one hundred dollars, or imprisonment not more than one year, or both, at the discretion of the court.

Changing True Value of Ores

SEC. 2324. Any person, corporation or association, or the agent of any person, corporation or association engaged in the milling, sampling, concentrating, reducing, shipping or purchasing of ores in this Territory, who shall in any manner knowingly alter or change the true value of any ores delivered to him or them, so as to deprive the seller of the result of the correct value of the same, or who shall substitute other ores for that delivered to him or them, or who shall issue any bill of sale or certificate of purchase that does not exactly and truthfully state the actual weight, assay value and total amount paid for any lot or lots of ore purchased, or who, by any secret understanding or agreement with another, shall issue a bill of sale or certificate of purchase that does not truthfully and correctly set forth the weight, assay value and total amount paid for any lot or lots of ore purchased by him or them, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined in a sum not exceeding one thousand dollars, nor less than one hundred dollars, or imprisonment not more than one year, or both, at the discretion of the court.

Felony

SEC. 2325. If any person, lessee, licensee or employé in or about any mine in this Territory, shall break and sever, with intent to steal, the ore or mineral from any mine, lode, ledge or deposit, in this Territory, or shall take, remove or conceal the ore or mineral from any mine, lode, ledge or deposit, with intent to defraud the person or persons rightfully entitled to any such mine, lode, ledge or deposit, such offender shall be deemed guilty of felony, and on conviction shall be punished as for grand larceny.

Fraudulent Misrepresentation

SEC. 2326. Any person or persons who shall falsely or fraudulently misrepresent the character or quality of any mine or the ores, minerals or deposits therein with fraudulent intent to injure the owner or owners of such mine or to depreciate the value of the same, or to prevent a sale thereof, shall be deemed guilty of blackmail, and upon conviction thereof shall be fined in a sum not to exceed one thousand dollars, nor less than five hundred, or to be imprisoned in the county jail not exceeding ninety days, or with both such fine and imprisonment, in the discretion of the court.

Damage by Live Stock

SEC. 2327. Hereafter the owner of any live stock in this Territory shall not be liable to the owner or his agent of any mining or mineral claim or mill site for damages done by way of trespass upon the same by said live stock other than for actual damage done to buildings, tents, mining supplies or other personal property situated thereon: *Provided*, That nothing in this act shall be construed as abridging or curtailing any of the existing rights of any such owner whenever any such mining or mineral claim or mill site may be used by the owners thereof, his tenant or lessee, as a live stock ranch.

Right of Way

SEC. 2328. That any mine owner or mine owners or any mining corporation, for the purpose of transporting ores to a mill or reduction works of any sort for the reduction of ores shall have a right of way for a tramway or railway across lands of other persons by condemnation and payment of damages. [Sections 2329 to 2336 inclusive provide the method of procedure.]

Disability of Employé of Smelting Works

SEC. 2337. Whenever any employé of any corporation, person or persons engaged in the management and operation of any smelting works in the Territory of New Mexico, shall become disabled and rendered unfitted for labor by reason of lead poisoning, which said lead poisoning shall be the result and consequence of said employé's performance and proper discharge of said employé's duties in and about said smelting works, said employé shall be provided with and receive all proper medical attendance, medicines and sustenance during such disability, at the expense of said corporation, person or persons so employing him.

Failure to Provide for Disabled Employé of Smelting Works

SEC. 2338. If any such corporation, person or persons engaged in the management and operation of any smelting works in the Territory of New Mexico shall fail to provide such employé with all proper medical attendance, medicines and sustenance during such disability of said employé, then the reasonable expense of providing such employé with all proper medical attendance, medicines and sustenance during such disability of said employé may be recovered from such corporation, person or persons so engaged in the management and operation of smelting works as aforesaid, in an action at law by and in the name of any person or persons rendering or providing such employé with the said medical attendance, medicines and sustenance.

Termination of Mining Lease

SEC. 2358. Hereafter, any lease upon any mine, or portion of a mine, not given in writing, for a specified time, shall not be terminated until after notice of the date of such termination, given by the lessor to the lessee, not less than thirty days prior to such date of termination.

SEC. 2359. The lessor and the mine upon which any lease is terminated without thirty days' notice, as provided in section two thousand three hundred and fifty-eight, shall be liable to the lessee for all damages resulting from such termination: *Provided*, That nothing in this act shall prevent the forfeiture and termination of any such lease without such notice when the lessee is working the leased ground in such manner as to damage the property.

Extracts from Compiled Laws of 1897, as amended by Act of March 16, 1899. Session Laws, 1899, p. 111.

AN ACT RELATIVE TO MILL-DITCHES

Course

SEC. 1. That the course of any mill-ditch already constructed shall not be changed, unless it be through some irrigating ditch to the cultivated lands which shall have the preference.

Arbitrators

SEC. 2. That whenever it may become necessary for the owner or owners of a mill to construct a mill-ditch, when the same is to be constructed in whole or in part over the land of another owner, and the said owner does not permit the construction of said ditch, then and in that event, the owner of the mill and the owner of the land over which the ditch is to pass shall apply to the justice of the peace of the precinct asking him to appoint three arbitrators or assessors, each party shall name one and the justice shall name the third, but if the land owner refuses to name one then the justice shall name two and the owner of the mill one.

Record Proceedings

SEC. 3. That the justice of the peace shall make a record of the fact that the arbitrators or assessors were appointed and shall swear them to act faithfully and impartially as such arbitrators, and to report to the said justice of the peace the amount by them assessed in order that the same may be turned over to the justice of the peace and by him turned over to the owner or owners of the land over which said ditch passes, and the said amount shall be paid in cash.

Payment

SEC. 4. That if the owner of the mill for which the ditch is desired pay the amount assessed against him, as above required, he may construct his ditch as the same may be designated by the arbitrators and according to the record of the justice of the peace of the report of the said arbitrators.

Approved March 16, 1899. Session Laws, 1899, p. 130.

AN ACT TO ENCOURAGE THE DEVELOPMENT OF MINERAL RESOURCES

Taxation

SEC. 1. That no tax shall be assessed, levied or collected upon any mining claim in this Territory, located under the mining laws of the United States, nor upon any shaft or workings therein, until after patent shall have been duly issued therefor by the United States; and for one year thereafter; but nothing herein contained shall be held or construed to exempt from taxation, as now provided by law, the improvements upon any such mining claim, other than the shafts and other workings as aforesaid, nor the net product of any such mining claim. Approved March 16, 1899. Session Laws, 1899, p. 130.

AN ACT IN RELATION TO MINING CLAIMS

Failure to do Annual Work

SEC. 1. Whenever the locator or locators of any mining claim in this Territory, located under the laws of the United States and of this Territory, shall fail or neglect to do and to perform, or cause to be done and performed, upon such mining claim, the amount and character of work necessary to be done and performed thereon as required by section 1 of Chapter XXV of the Acts of the 28th Session of the Legislative Assembly of the Territory of New Mexico, within the ninety days from the date of such location as provided in said section, such locator, or locators, and his or her assigns, shall forfeit

all right to such mining claim, and shall henceforth, for a period of ninety days from and after the expiration of such ninety days, be debarred and prohibited from relocating or procuring, or becoming interested, directly or indirectly, except as a *bona fide* purchaser for value in the relocation of such claim, or the location of any other claim which will include any portion of the ground which was included in such forfeited claim.

Forfeited Claims

SEC. 2. Whenever the locator or locators, or his or their assigns, of any lode or placer mining claim in this Territory, located under the laws of the United States and of this Territory, shall fail to do, or cause to be done, the amount of the assessment work required by law to be done thereon, within the time prescribed by law, such claim shall be considered forfeited and abandoned, and such locator or locators, and his or their assigns, shall thenceforth for the period of ninety days from and after the expiration of the time within which such work should have been done, be debarred and prohibited from relocating such claim, or becoming interested directly or indirectly, except as a *bona-fide* purchaser for value, in the location or relocation of any claim which shall include the land covered by such forfeited claim, or any part thereof. And the subsequent locator of such claim, or of any claim including the whole or any part of the land covered by such forfeited claim, shall not be entitled to credit for any work that may have been done thereon before the time of such forfeiture, nor shall the former owner of any such forfeited claim have any right to compensation therefor.

Altering or Defacing Mining Notices

SEC. 3. Any person or persons, or the manager, officer, agent or employé of any person, firm, corporation or association, who shall in any manner alter, deface or change the location notice of any mining claim in this Territory located under the laws of the United States and of this Territory, or any local regulations in force in the district wherein such claim is situated, thereby in any manner affecting the rights of any person, firm or corporation, to such claim or location, or the land covered thereby, shall be deemed guilty of a misdemeanor, and upon conviction thereof before any court of competent jurisdiction shall be fined in a sum not less than one hundred dollars, nor more than five hundred dollars, or imprisoned in the county jail for not less than sixty days, nor more than one year, or by both such fine and imprisonment, in the discretion of the court trying the case.

Nothing herein contained shall affect the rights of such locator or locators, and his or their assigns, to correct errors in such notice and file amended location notices as provided in Section 4 of said Chapter XXV of the Session Laws of 1889, and the laws of the United States; *Provided*, such change shall not affect or change the date of such location notice, or affect the rights of any other person.

Illegal Relocations

SEC. 4. Any person or persons, or the manager, officer, agent or employé of any person, firm or corporation, who shall, either by himself, or acting in collusion with others, relocate or attempt to relocate, or procure, or become interested, directly or indirectly in, and the relocation of, or in any manner

attempt to hold possession of, any forfeited mining claim, contrary to the provisions of this act, or who shall locate or in any manner become interested in the location of any other claim which shall include the whole, or any portion, of the ground covered by such forfeited claim, contrary to this act, shall be deemed guilty of a misdemeanor, and upon conviction thereof before any court of competent jurisdiction shall be subject to the same penalty and punishment as provided in Section 3 of this act.

Possession — Trespass

SEC. 5. When any person, firm or corporation shall be lawfully and peaceably in possession of any mining claim in this Territory, and shall have complied with all the requirements of law and regulations in force in the district in which said mining claim is situated, such persons, firm, or corporation shall be deemed to be the rightful possessor of such mining claim and of the land included therein; and any person or the officer, agent or employé of any corporation who shall by force, intimidation, fraud or stealth, or in the temporary absence of the rightful possessor, enter upon such mining claim with intent to hold the same, or any part thereof, against the rightful possessor, shall be considered a trespasser; and the judge of the district court for the district in which such claim is situated shall, upon the proper showing of such facts made by affidavit or by oral testimony upon a hearing ordered for that purpose, and upon the filing with the clerk of said district court of a good and sufficient bond, grant an order to show cause why a writ of injunction should not issue, enjoining and restraining such trespasser, his servants, agents, and employés, and any persons associated with him, from in any manner interfering with the rightful possessor in the possession of such claim until the final disposition of said cause.

Boundaries, How Marked

SEC. 6. That Section 2 of Chapter XXV of the Acts of the 28th Session of the Legislative Assembly of the Territory of New Mexico be, and the same is hereby, amended to read as follows:

"Within one hundred and twenty days from the date of locating any mining claim within this Territory, the locator or locators thereof shall cause the surface boundaries of such claim to be plainly marked by eight substantial posts or stone monuments, each projecting at least three feet above the surface of the ground, to wit: One at each corner of said claim, and one at the center of each end and side line thereof, each of which posts or monuments shall be plainly marked so as to show the name of such claim and the direction thereof from each post or monument."

Regulations Filed by Owners of Patented Land

SEC. 7. The owner or owners of lands within this Territory, the title to which has been vested by letters-patent from the United States Government, may make and file in the office of the county clerk of the county in which such lands are situated, such rules and regulations, not inconsistent with the laws of the United States, and of this Territory, as they may see fit, governing the location and acquisition of mining claims thereon, which rules and regulations when so filed shall be binding upon all parties, and a copy thereof

duly certified by the county recorder shall be received and admitted as evidence in any suit or proceedings relating to such mining claims; such rules and regulations may be changed and supplemented from time to time by other rules and regulations filed in like manner, providing that such change shall not affect rights acquired prior thereto.

Affidavit of Work Done

SEC. 8. The owner or owners of any unpatented mining claim in this Territory, located under the laws of the United States and of this Territory, shall within sixty days from and after the time within which the assessment work required by law to be done upon such claim should have been done and performed, cause to be filed with the recorder of the county in which such mining claim is situated, an affidavit setting forth the time when such work was done, and the amount, character and actual cost thereof, together with the name or names of the person or persons who performed such work; and such affidavit when made and filed as herein provided shall be *prima facie* evidence of the facts therein stated. The failure to make and file such affidavit as herein provided shall, in any contest, suit of proceedings touching the title to such claim, throw the burden of proof upon the owner or owners of such claim to show that such work has been done according to law.

Approved March 18, 1897. Session Laws, 1897, p. 125.

Protection of Mining Property from Trespass

SEC. 1. Whenever the owner or lessee of any mining property in the Territory of New Mexico shall desire to operate the same and to prevent trespassers from entering thereon, such owner or lessees may post notices in English and Spanish in at least three public places on said premises, warning all persons from entering upon said property without the permission of the owner or lessee or his or their authorized agent or superintendent, which notices shall describe the boundaries of said property.

SEC. 2. After the posting of such notices, it shall be unlawful for any person to enter upon said premises without such permission, mentioned in Section 1 of this act, and any persons violating the provisions of this act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine not exceeding fifty dollars or imprisonment in the county jail for a period not exceeding thirty days, or both such fine and imprisonment, in the discretion of the court: *provided*, that this section shall not apply to any person or persons entering said premises in good faith for the purpose of ascertaining whether assessment work has been done, or for the purpose of making a location on government land.

SEC. 3. All acts and parts of acts in conflict herewith are hereby repealed and this act shall take effect and be in full force thirty days from and after its passage and approval.

[Approved March 3, 1905.]

OREGON

CONSTITUTIONAL PROVISION

Chinamen Not to Hold Real Estate or Work Mining Claims

SEC. 8. No Chinaman, not a resident of the State at the adoption of this

constitution, shall ever hold any real estate or mining claim, or work any mining claim therein.

The legislative assembly shall provide by law in the most effectual manner for carrying out the above provision. [Art. XV, Or. Const.]

MINING CLAIMS

Mining Claims, Plurality of — When and to What Extent Allowed

SEC. 3974. Any person may hold one claim by location, as hereinafter provided, upon each lead or vein, and as many by purchase as the local laws of the miners in the district where such claims are located may allow; and the discoverer of any new lead or vein not previously located upon shall be allowed one additional claim for the discovery thereof; nothing in this section shall be so construed as to allow any person not the discoverer to locate more than one claim upon any one lead or vein. [L. 1864, D. Cd. p. 813, § 3; H. C. §3829.]

Location of Claim — Notice, What to Contain — Boundaries — How Marked

SEC. 3975. Any person, a citizen of the United States, or one who has declared his intention to become such, who discovers a vein or lode of mineral-bearing rock in place upon the unappropriated public domain of the United States within this State, may locate a claim upon such vein or lode so discovered, by posting thereon a notice of such discovery and location, which said notice shall contain: *first*, the name of the lode or claim; *second*, the name or names of the locator or locators; *third*, the date of the location; *fourth*, the number of linear feet claimed along the vein or lode each way from the point of discovery, with the width on each side of the said lode or vein; *fifth*, the general course or strike of the vein or lode as nearly as may be with reference to some natural object or permanent monument in the vicinity thereof, and by defining the boundaries upon the surface of each claim so that the same may be readily traced. Such boundaries shall be marked within thirty days after posting of such notice by six substantial posts, projecting not less than three feet above the surface of the ground, and not less than four inches square or in diameter, or by substantial mounds of stone, or earth and stone, at least two feet in height, to wit: one such post or mound of rock at each corner and at the center ends of such claims. [L. 1898, p. 16., §1; L. 1901, p. 140, § 1.]

Decisions

Mineral land that has been regularly located and has for many years been in possession of persons claiming to own it is not public land subject to location. Thus, where plaintiff had held, occupied, and been in possession of a mining claim under color of title, in pursuance of law and the local rules and regulations of the mining district, for more than twenty years prior to the attempted location of the defendants, such claims were not public mineral lands of the United States, and the plaintiff could maintain a suit to enjoin defendant's location, though there was no evidence of the transfer of the original locator's title to plaintiff: Risch *v.* Wiseman, 36 Or. 484, 59 Pac. 1111.

The discoverer of a lode must, in the absence of some local rule of miners

or legislative regulation allowing time for exploration, immediately locate his claim by distinctly marking same on the ground so that his boundaries can be readily ascertained, in order to hold it against a subsequent valid location peaceably made: Patterson *v.* Tarbell, 26 Or. 29, 37 Pac. 76.

Where a discoverer proceeds diligently to complete his location by marking his boundaries and otherwise complying with the law, he will be protected in his right as against a subsequent locator of the same ground; but where he does not so proceed, if his location is not completed, he will not be so protected: Patterson *v.* Tarbell, 26 Or. 33, 37 Pac. 76.

The right of an alien to inherit a mining claim located upon government land as against every other person but the United States is determined by the laws of the state in which the claim is located: Lohmann *v.* Helmer, 104 Fed. 178.

Defective Location Notice — How Cured

If at any time the locator of any mining claim heretofore or hereafter located, or his assigns, shall apprehend that the original notice of location of said mining claim was defective, erroneous, or that the requirements of the law had not been complied with before the filing of the said notice, such locator, or his assigns, may post and file for record in the manner now provided by law, an amended notice of the said location which shall relate back to the date of the original location, *provided*, that the posting and filing of such a amended notice of location shall not interfere with the existing rights of others at the time of posting such amended notice of location. [L. 1905, p. 254, § 1.]

Recording Copy of Notice — Location Work

SEC. 3976. Such locator shall, within sixty days from and after the posting of the location notices by him upon the lode or claim, file for record with the recorder of conveyances, if there be one, who shall be the custodian of mining records and miners' liens, otherwise with the clerk of the county wherein the said claim is situated, a copy of the notice so posted by him upon the lode or claim, having attached thereto an affidavit showing that the work required to be done by section 3977 has been done and performed, and shall pay to the recorder or clerk a fee of one dollar for such record thereof, which said sum the recorder or clerk shall immediately pay over to the treasurer of such county and shall take his receipt therefor, as in case of other county funds coming into the possession of such officer. Such recorder or clerk shall immediately record such location notice and the affidavit annexed thereto. No location notice shall be entitled to record, or recorded, until the work required by section 3977 has been done and the affidavit in proof thereof is attached to the notice to be recorded. [L. 1898, p. 17, § 2; L. 1901, p. 140, § 2.]

Work on Claim — What Required and within what Time

SEC. 3977. Before the expiration of sixty days from the date of the posting of the notice of discovery upon his claim as aforesaid, and before recording the notice of location as required by section 3976, the locator must sink a discovery shaft upon the claim located to a depth of at least ten feet from the lowest part of the rim of such shaft at the surface, or deeper if necessary, to show by such work a lode or vein of mineral deposit in place.

A cut or cross-cut or tunnel which cuts the lode at a depth of ten feet, or an open cut at least six feet deep, four feet wide and ten feet in length along the lode from the point where the same may be in any manner discovered, is equivalent to such discovery shaft. Such work shall not be deemed a part of the assessment work required by the Revised Statutes of the United States. The locator, or some one for him who did work upon and has knowledge of the facts relating to the sinking of the discovery shaft, shall make and attach to the copy of the notice of location to be recorded an affidavit showing the compliance by the locator with the provisions of this section, which affidavit shall be recorded with such copy of the location notice. [L. 1898, p. 17, § 3; L. 1901, p. 141, § 3.]

Abandoned Claims Deemed Unappropriated Mineral Lands

SEC. 3978. Abandoned claims shall be deemed unappropriated mineral lands, and titles thereto shall be obtained as in this act specified, without reference to any work previously done thereon. [L. 1898, p. 17, § 4.]

Mining Claims are Real Estate

SEC. 3979. All mining claims, whether quartz or placer, shall be real estate, and the owner of the possessory right thereto shall have a legal estate therein within the meaning of section 326. [L. 1898, p. 17, § 5; L. 1899, p. 62, § 1.]

Decisions

A mining claim being real estate, upon the death of the owner passes at once to the heir, when such claim is not held or required for any purpose of the administration: Lohmann *v.* Helmer, 104 Fed. 178.

Prior to the passage of this statute it was held that the locator of a quartz mine, prior to the time he became entitled to a patent, has a mere right of possession or possessory title, which is valuable, and which will be protected by law, but which is not real estate or an interest in land: Duffy *v.* Mix, 24 Or. 265, 33 Pac. 807; Allen *v.* Dunlap, 24 Or. 229, 33 Pac. 675; Herron *v.* Eagle Min. Co., 37 Or. 157, 61 Pac. 417.

Taxation, Claim Exempt From, Prior to Patent

SEC. 3980. Prior to the obtaining of patent from the general government of the United States to such claim, the same shall be exempt from taxation, except as to the improvements, machinery, and buildings thereon. [L. 1898, p. 17, § 6.]

Conveyances, Subject to Provisions Relating to Other Real Property

SEC. 3981. All conveyances of mining claims, or of interests therein, either quartz or placer, shall be subject to the provisions governing transfers and mortgages of other realty as to execution, recordation, foreclosure, execution sale, and redemption thereunder, but such redemption by the judgment debtor must take place within sixty days from date of confirmation, or such right is lost. [L. 1898, p. 17, § 7.]

Redemption — Amount Required to be Paid On

SEC. 3982. In case of redemption from sale under judgment or decree, the redemptioner shall pay such sum or sums as are now required by law

for redemption under execution sale, and such additional sum as may have been expended upon the property so redeemed by the purchaser under execution, or his assigns, in order to keep alive the possessory right thereto after such execution sale, not exceeding the sum of one hundred dollars for each claim, with ten per centum interest thereon from date of such expenditure or expenditures. [L. 1898, p. 18, § 8.]

Ditches and Mining Flumes Real Property—Abandonment of

SEC. 3983. Ditches and mining flumes, permanently affixed to the soil, are hereby declared to be real estate: Provided, that whenever any person, company, or corporation, being the owner of any such ditch, flume, and the water right appurtenant thereto, shall cease to operate or exercise ownership over said ditch, flume, or water right, for a period of five years, and every person, company, or corporation who shall remove from this State with the intent or purpose to change his or its residence, and shall remain absent one year without using or exercising ownership over such ditch, flume, or water right, shall be deemed to have lost all title, claim, and interest therein. [L. 1898, p. 18, § 9.]

Decisions

An interest in a ditch used for mining purposes cannot be transferred, except by deed; Mattis *v.* Hosmer, 37 Or. 531, 535, 62 Pac. 17, 632.

Where a person has not used for the purpose of conveying water a mining ditch for eight or ten years, and no act of ownership has been exercised thereover, there was an abandonment of such ditch: Ison *v.* Nelson Min. Co., 47 Fed. 202.

There can be no abandonment, however, without some act of the will and an intent to abandon; such intent may be inferred from the declaration and acts of the party charged with the abandonment, and where, after such abandonment, the party fails to exercise acts of ownership within a year his right is lost: Dodge *v.* Marden, 7 Or. 457.

Act Applies to Locations Subsequent to Last Day of December, 1898

SEC. 3984. Any and all locations or attempted locations of quartz mining claims within this State subsequent to the thirty-first day of December, 1898, that shall not comply and be in accordance with the provisions of this act shall be null and void. [L. 1898, p. 18, § 10.]

Grub Staking Contracts must be in Writing, Requirements of

SEC. 3985. All contracts of mining copartnership, commonly known as "grub staking," shall be in writing, and filed for record with the recorder of conveyances of the county wherein locations thereunder are made. Such contracts must contain, *first*, the names of the parties thereto, and, *second*, the duration thereof; otherwise, such contracts shall be null and void. [L. 1898, p. 18, § 11.]

Mines, Location of, Subject to what Prior Right

SEC. 3986. Any location of any mining claim made upon any natural stream, or contiguous or near to any placer mine, or upon or below the dump of any placer mine, shall be subject to the prior right of all mines in operation

prior to the making of such location, to discharge debris, gravel, earth, and slickens as the same was discharged, or may be discharged, at the time of making such subsequent location of mining claim or claims. [L. 1901, p. 122, § 1.]

ANNUAL ASSESSMENT WORK — NOTICE OF TO CO-OWNERS — FORFEITURE OF INTEREST

Whenever any quartz or placer mines shall be owned by one or more persons, companies, or corporations, or when any person, company, or corporation shall own any quartz or placer mines, in common with any other person, company, or corporation, any such person, company, or corporation owning an interest in said mine or mines, whether said interest be legal or equitable, shall have the right to perform the annual assessment work required by the laws of the United States and of the State of Oregon to be performed upon such mine or mines; such work, when so performed, shall, when it complies with the laws of the United States and of the State of Oregon, protect such mine or mines from relocation. Upon the failure of any one of several co-owners of such mine or mines to contribute his proportion of the expenditures required in such assessment work, or to perform or pay for his or their proportion thereof, the co-owner or co-owners of such mine or mines who have performed or caused to be performed the said labor or assessment work, may, at the expiration of the year for which such assessment work was performed, give such delinquent co-owner or co-owners notice that the assessment work for said year has been performed, stating by whom performed, and the amount of work performed, and the dates between which the same was performed, together with a statement of the amount due from said delinquent co-owner or co-owners for his or their proportion of said assessment work, and requiring said delinquent co-owner or co-owners, within ninety days from the date of the service of said notice, to pay to the co-owner or co-owners who performed or caused to be performed such assessment work, his or their proportion thereof. Such notice shall further state that if such delinquent co-owner or co-owners shall fail or refuse to contribute his or their proportion due for the said assessment work, his or their interest in said mine or mines will become the property of such co-owner or co-owners who have performed or caused to be performed such assessment work. Such notice shall be in writing and signed by the co-owner or co-owners who performed or caused to be performed such assessment work, and shall be served upon said delinquent co-owner or co-owners, personally, by the sheriff of the county in which said mines are situate, if said delinquent co-owner or co-owners be within said county. If said delinquent co-owner or co-owners can be found in any other county within the State of Oregon, then such notice shall be served by the sheriff of such county in which said delinquent co-owner or co-owners then are. If said delinquent co-owner or co-owners cannot be found within the State of Oregon, or if said delinquent co-owner or co-owners be at the time of giving said notice without the State of Oregon, then the service of said notice shall be made by the publication thereof in the weekly newspaper published in said county nearest to where said mines are situate; if there be two or more papers published in said county at the same

distance from said mines, then the co-owner or co-owners giving such notice may elect as to which paper said notice shall be published in. If there be no weekly newspaper published within said county, then service of said notice shall be made by publication in any other weekly newspaper within the State of Oregon, published nearest the said mines; said notice shall be published at least once a week for a period of ninety days from and after the first publication thereof. If said notice shall be served by any sheriff of this State, as herein provided, such sheriff shall make return thereof by filing such notice with his return showing such service with the county recorder for the county within which such mine or mines are situate, if there be a county recorder in said county; and, if not, he shall file the same with the county clerk in such county in which said mine or mines are situate. If personal service of such notice cannot be had, as herein provided, proof of such service shall be made by the filing with the county recorder of the county in which said mine or mines are situate, if there be a county recorder, and if there be no county recorder in said county, then by filing with the county clerk of said county said notice as published, attached to an affidavit, made by the printer, foreman, or publisher of such newspaper, to the effect that such newspaper is of general circulation throughout said county, is published weekly, and that such notice was published at least once a week in said newspaper for a period of not less than ninety days from and after the first publication thereof. That at the expiration of ninety days from the date of the personal service of said notice upon said delinquent co-owner or co-owners, or, if at the expriation of ninety days from the date of the last publication of said notice, said delinquent co-owner or co-owners shall not have paid to the co-owner or co-owners who performed or caused to be performed such assessment work, his or their proportion thereof, then the title to the interest of said delinquent co-owner or co-owners in said mine or mines shall be immediately vested in the co-owner or co-owners who performed or caused to be performed such assessment work; and the co-owner or co-owners who performed such assessment work shall be entitled to file with the county recorder of the county where said mines are situate, or, if there be no county recorder in said county, then with the county clerk of said county, his or their affidavit or affidavits, to the effect that said payment has not been made; and upon the filing of such affidavit or affidavits said county recorder or county clerk, as the case may be, shall record such notice, proof of service thereof, and affidavit or affidavits in a book kept by him for such purpose, and shall then and there issue to such co-owner or co-owners who shall have performed or caused to be performed such assessment work, a certificate to the effect that he has filed and recorded said notice, proof of service, and affidavit or affidavits of non-payment, and to the effect that such co-owner or co-owners who have performed or caused to be performed such assessment work, have become and are the owners of all of the right, title, and interest of said delinquent co-owner or co-owners of said property. Such certificate shall not be issued until such co-owner or co-owners entitled to the same shall have paid to the said county recorder or county clerk, as the case may be, a fee of $1 for such certificate. If prior to the issuing of such certificate, there shall be filed with said county recorder or county clerk an affidavit or affidavits to the effect that such payment has

not been made by such delinquent co-owner or co-owners, and there shall also within said time have been filed with said county recorder or county clerk an affidavit by the delinquent co-owner or co-owners that such payment has been made, then said county recorder or county clerk, as the case may be, shall not issue such certificate, but such parties shall be left to establish such fact by suit to quiet the title to said premises, and if, in such suit, it shall appear either that the assessment work was not performed by the co-owner or co-owners claiming to have performed the same, or that the delinquent co-owner or co-owners have performed or paid his or their proportion of said assessment work, then a decree shall be entered in said suit to that effect; but if, in said suit, it shall be established that said assessment has been performed by or has been caused to be performed by the co-owner or co-owners claiming to have performed, or caused the same to have been performed, and that the delinquent co-owner or co-owners have not performed their proportion thereof, or have not paid their proportion thereof, then a decree shall be entered therein decreeing the co-owner or co-owners who have performed said assessment work to be the owner or owners of all of the interest of said delinquent co-owner or co-owners in said premises, which decree shall be entitled to record in the miscellaneous records kept by the county recorder or county clerk in said county, and shall be indexed in the index with the record of deeds and mining conveyances for said county. Such certificate, when issued as herein provided, shall be equivalent to a deed from such delinquent co-owner or co-owners of all of their interests in and to all of said mines described in such notice and shall convey the interest of the delinquent co-owner or co-owners in said premises to the co-owner or co-owners who performed or caused to be performed such assessment work; such certificate may be introduced in evidence in any cause where the ownership of said property may become material, and when so introduced shall have the same force and effect as would a duly executed and delivered deed from such delinquent co-owner or co-owners of said premises, a certified copy of such certificate, and the certified copy of such notice and return when made and certified to by such county recorder or county clerk, as the case may be, shall be admissible in evidence in any trial where it is material to establish the proof of service of such notice or the ownership of said property. Such certificate, when given by such recorder or county clerk, shall be entitled to record in the office of the officer issuing the same, upon the payment of the same fees as are required for the recording of said mining conveyances; such county clerk or county recorder, as the case may be, shall keep a record book, showing the record of such certificates as shall be recorded by him, and upon recording the same shall index the said certificates in a book kept by him for that purpose, and shall likewise index the same in the deed records of mining conveyances kept by him. Such indexing and recording shall have the same force and effect as the indexing and recording of deeds to other real property, and shall give like constructive notice. [L. 1903, p. 326, § 1.]

FEES PROPERTY OF COUNTY COLLECTING

All fees collected under this act shall be the property of the county in which the same are collected, and shall be accounted for by the officer collect-

ing the same, the same as other recording fees are accounted for. [L. 1903, p. 330, § 2.]

SOUTH DAKOTA

Location and Size of Mining Claim

Length of Claim

Section 2532. The length of any lode claim hereafter located within this State may equal but shall not exceed fifteen hundred feet along the vein or Lode. [C. L. 1997.]

Width of Claim

Sec. 2533. The width of lode claims shall be one hundred and fifty feet on each side of the center of the vein or crevice; *Provided*, That any county may at any general election determine upon a less width than above specified, *Provided*, That not less than twenty-five feet on each side of the vein or lode shall be prohibited. [C. L. 1998.]

Discoverer to Record Claim

Sec. 1999. The discoverer of a lode shall within sixty days from the date of discovery record his claim in the office of the register of deeds of the county in which such lode is situated, by a location certificate, which shall contain:

1st, the name of lode; 2d, the name of the locator, or locators; 3d, the date of location; 4th, the number of feet in length claimed on each side of the discovery shaft; 5th, the number of feet in width claimed on each side of the vein or lode; 6th, the general course of the lode, as near as may be; 7th, that when the location certificate is filed for record in the office of the register of deeds, the register of deeds shall immediately furnish to the locator or locators a certificate giving the name of the location; the name of the locator or locators; the date of filing in the office of the register of deeds; and the book and page where recorded, for which certificate the register of deeds shall receive the sum of ten cents in addition to the amount now allowed by law for filing and recording location certificates, which certificate shall be delivered to the locator or locators, who shall post the same, or a copy thereof, on the said claim on the same post or tree where the original notice is posted and in a conspicuous place. And if said certificate from said register of deeds or a copy thereof is not so posted within ninety days from the date of the original notice the said claim shall be deemed abandoned ground and be subject to relocation by any qualified locator. The said register of deeds shall, at the time of issuing said certificate, make a notation on the margin of the recorded certificate giving the date of the delivery of said certificate, which notation shall be *prima facie* evidence of the delivery and posting of the same as herein provided.

Certificate — When Void

Sec. 2535. Any location certificate of a lode claim which shall not contain the name of the lode, the name of the locator, the date of location, the number of lineal feet claimed on each side of the discovery shaft, the number of feet in width claimed, the general course of the lode, and such

description as shall identify the claim with reasonable certainty, shall be void. [C. L. 2000.]

Manner of Locating

SEC. 2536. Before filing such location certificate the discoverer shall locate his claim by first sinking a discovery shaft thereon sufficient to show a well-defined mineral vein or lode, and not less than ten feet in depth on the lower side. Second: by posting at the point of discovery, on the surface, a plain sign or notice containing the name of the lode, the name of the locator or locators and the date of discovery, the number of feet claimed in length on either side of the discovery, and the number of feet in width claimed on each side of the lode. Third: by marking the surface boundaries of the claim. [C. L. 2001.]

Marking Surface Boundaries

SEC. 2537. Such surface boundaries shall be marked by eight substantial posts, hewed or blazed on the side or sides facing the claim and plainly marked with the name of the lode and the corner, end or side of the claim that they respectively represent, and sunk in the ground, to wit: one at each corner and one at the center of each side line, and one at each end of the lode. When it is impracticable on account of rock or precipitous ground to sink such posts, they may be placed in a monument of stone. [C. L. 2002.]

Requisites of a Location

SEC. 2538. Any open cut, at least ten foot face, crosscut or tunnel at a depth sufficient to disclose the mineral vein or lode, or an adit of at least ten feet in along the lode, from the point where the lode may be in any manner discovered, shall be equivalent to a discovery shaft. [C. L. 2003.]

Time for Performing Labor

SEC. 2539. The discoverer shall have sixty days from the time of uncovering or disclosing a lode to sink a discovery shaft thereon. [C. L. 2004.]

Certificate Construed

SEC. 2540. The location or location certificate of any lode claim shall be so construed to include all surface ground within the surface lines thereof and all lodes and ledges throughout their entire depth, the top or apex of which lie inside of such lines extended vertically, with such parts of all lodes or ledges as continue by dip beyond the side lines of the claim, but shall not include any portion of such lodes or ledges beyond the end lines of the claim or the end lines continued, whether by dip or otherwise, or beyond the side lines in any other manner than by the dip of the lode. [C. L. 2005.]

Claim not to Extend beyond Boundary Line

SEC. 2541. If the top or apex of the lode in its longitudinal course extends beyond the exterior lines of the claim at any point on the surface, or as extended vertically downward, such lode may not be followed in its longitudinal course beyond the point where it is intersected by the exterior. [C. L. 2006.]

Security from Miner

SEC. 2542. When the right to mine is in any case separate from the

ownership or right of occupancy to the surface, the owner or rightful occupant of the surface may demand satisfactory security from the miner, and if it be refused may enjoin such miner from working until such security is given. The order for injunction shall fix the amount of bond. [C. L. 2007.]

Amended Certificate Filed

SEC. 2543. If at any time the locator of any mining claim heretofore or hereafter located, or his assigns, shall apprehend that his original certificate was defective, erroneous, or that the requirements of the law had not been complied with before filing, or shall be desirous of changing his surface boundaries, or of taking in any part of an overlapping claim which has been abandoned, or in case the original certificate was made prior to the passage of this law, and he shall be desirous of securing the benefits of this article, such locator or his assigns may file an additional certificate subject to the provisions of this article: *Provided*, That such relocation does not interfere with the existing rights of others at the time of such relocation; and no such relocation or the record thereof shall preclude the claimant or claimants from proving any such title or titles as he or they may have held under previous locations. [C. L. 2008.]

Amount of Annual Work

SEC. 2544. The amount of work to be done or improvements made during each year to hold possession of a mining claim shall be that prescribed by the laws of the United States, to wit: one hundred dollars annually; *Provided*, That the period within which the work required to be done annually on all unpatented claims so located shall commence on the first day of January succeeding the date of location of such claim. [C. L. 2009.]

Relocating Abandoned Claim

SEC. 2545. The relocation of abandoned lode claims shall be by sinking a new discovery shaft and fixing new boundaries in the same manner as if it were the location of a new claim, or the relocator may sink the original shaft, cut or adit to a sufficient depth to comply with sections 2536 and 2538, and erect new or adopt the old boundaries, renewing the posts if removed or destroyed. In either case a location stake shall be erected. In any case, whether the whole or part of an abandoned claim is taken, the location certificate must state that the whole or any part of the new location is located as abandoned property. [C. L. 2010.]

Certificate Contains but One Location

SEC. 2545. No location certificate shall claim more than one location, whether the location be made by one or several locators, and if it purport to claim more than one location it shall be absolutely void, except as to the first location therein described; and if they are described together, or so that it cannot be told which location is first described, the certificate shall be void as to all. [C. L. 2011.]

Recording Fee

SEC. 2547. The register of deeds shall be entitled to receive the sum of one dollar for each location certificate recorded and certified by him, and shall furnish the locator or locators with a certified copy of such certificate when

demanded, for which he shall be entitled to receive fifty cents. [C. L. 2012.]

SEC. 2548. In all the actions in any circuit court of this state wherein the title or right of possession to any mining claim shall be in dispute, the said court or the judge thereof may, upon application of any of the parties to such suit, enter an order for the underground as well as surface survey of such part of the property in dispute as may be necessary to a just determination of the question involved. Such order shall designate some competent surveyor not related to any of the parties to such suit, or in anywise interested in the result of the same; and upon the application of the party adverse to such application, the court may also appoint some competent surveyor, to be selected by such adverse applicant, whose duty it shall be to attend upon such survey and observe the method of making the same; said second survey to be at the cost of party asking therefor. It shall also be lawful in such order to specify the names of witnesses named by either party, not exceeding three on each side, to examine such property, who shall be allowed to enter into such property and examine the same; such court or the judge thereof, may also cause the removal of any rock, debris, or other obstacle in any of the drifts or shafts of said property, when such removal is shown to be necessary to a just determination of the question involved; *provided, however*, that no such order shall be made for survey and inspection except in open court or in chambers, upon notice of application of such order of at least six days, and not then except by agreement of parties or upon the affidavit of two or more persons that such survey and inspection is necessary to the just determination of the suit, which affidavits shall state the facts in such case, and wherein the necessity for survey exists; nor shall such order be made unless it appears that the party asking therefor had been refused the privilege of survey and inspection by the adverse party.

SEC. 2549. The circuit courts, or any judge thereof sitting in chancery, shall have, in addition, to the power already possessed, power to issue writs of injunction for affirmative relief, having the force and effect of a writ of restitution, restoring any person or persons to the possession of any mining property from which he or they may have been ousted by force and violence or by fraud, or from which they are kept out of possession by threats, or whenever such possession was taken from him or them by entry of the adverse party on a Sunday or legal holiday or while the party in possession was temporarily absent therefrom — the granting of such writ to extend only to the right of possession under the facts of the case in respect to the manner in which the possession was obtained, leaving the parties to their legal rights on all other questions as though no such writ had issued.

RIGHT OF WAY

Owners of Mines Have Right of Way

SEC. 2550. The proprietor, owner or owners of mining claims, whether patented under the laws of the United States or held under the local laws and customs of the State, shall have a right of way for ingress for necessary purposes over and across the land or mining claim, patented or otherwise, of others as hereinafter provided. [C. L., 2016.]

For Road or Ditch

SEC. 2551. Whenever any such mine or mining claim shall be so situated that it cannot be conveniently worked without a road thereto, or a ditch or a cut to convey the water therefrom, or without a flume to carry water and tailings therefrom, or without a shaft or tunnel thereto, which road, ditch, cut or tunnel shall necessarily pass over, under, through or across any lands or mining claims owned or occupied by others, either under a patent from the United States or otherwise, then shall such first mentioned owner or owners be entitled to a right of way for said road, ditch, flume, shaft or tunnel over, under, through and across such other lands or mining claims, upon compliance with the provisions of this act. [C. L. 2017.]

Proceedings to Obtain

SEC. 2552. Whenever the owner or owners of any mining claim shall desire to work the same, and it is necessary to enable him or them to do so successfully and conveniently, that he or they shall have a right of way for any of the purposes in the foregoing section, and such right of way shall not have been acquired by agreement between him or them, and the claim over, under, across and upon which he, or they, seek to establish such right of way, it shall be lawful for him or them to present to the judge of the circuit court of the several counties of the State of South Dakota in which such right of way or some part thereof sought to be enforced is situated, a petition praying that such right of way be awarded to him or them. Such petition shall be verified and contain a particular description of the character and extent of the right sought, a description of the mine or claim of the petitioner, and the claim or claims on lands to be affected by such right or privilege, with the names of the occupants or owners thereof; it may also set forth any tender or offer hereinafter mentioned, and shall demand the relief sought. [C. L. 2018.]

Proceedings before the Court

SEC. 2553. Upon the receipt of such petition and filing thereof with the clerk of such court, the judge shall direct a citation to issue, under the seal of such court, to the owners named in the petition, of mining claims and lands to be affected by the proceedings, directing them and each of them to appear before the judge on a day therein named, which shall not be less than ten days from the service thereof, and show cause why such right of way should not be allowed as prayed for. Such citation shall be served on each of the parties in the manner prescribed by law for serving summons in ordinary proceedings at law. [C. L. 2019.]

Commissioners Appointed

SEC. 2554. Upon the return day of the citation, or upon any day to which the hearing shall be adjourned, the judge shall proceed to hear the allegations and proofs of the respective parties; and if upon such hearing he is satisfied that the claims of the petitioner should be worked by means of the privilege prayed for, he shall make an order adjudging and awarding to the petitioner such right of way, and shall appoint three commissioners who shall be disinterested parties and residents of the county to assess the damages resulting to the lands or claims affected by such order. [C. L. 2020.]

Damages to be Assessed

SEC. 2555. The commissioners so appointed shall be sworn or affirmed to faithfully and impartially discharge their duties and shall proceed without unreasonable delay to examine the premises, and shall assess the damage resulting from such right or privilege prayed for and report the amount to the judge appointing them, and if such right of way shall affect the property of more than one person or company, such report shall contain an assessment of damages to each company or person. [C. L. 2021.]

Report may be Set Aside

SEC. 2556. For good cause shown the judge may set aside the report of such commissioners and appoint three other commissioners, whose duties shall be the same as above mentioned. [C. L. 2022.]

Petitioner Entitled to Right of Way—When

SEC. 2557. Upon the payment of the sum assessed as damages aforesaid to the persons to whom it shall be awarded, or a tender thereof to them, then the person petitioning aforesaid shall be entitled to the right of way prayed for in their or his petition, and may immediately proceed to occupy the same and to erect thereon such work and structures, and make thereon such excavations as may be necessary to the use and enjoyment of the right of way so awarded. [C. L. 2023.]

Appeals

SEC. 2558. Appeals from the assessment of the commissioners may be made and prosecuted in the proper circuit court by any party interested, at any time within ten days after filing the report of the commissioners, and a written notice of such appeal shall be served upon the appellee in the same manner as summons are served in civil actions. The appellant shall file with the clerk of the court to which the appeal is made, a bond with sureties to be approved by the clerk, in the amount of the assessment appealed from, in favor of the appellee, conditioned that the appellant shall pay any costs that may be awarded to the appellee, and abide any judgment that may be rendered in the case. [C. L. 2024.]

Trial of the Appeal

SEC. 2559. Appeals shall bring before the appellate court only the propriety of the amount of damages, and may be tried by the court or by a jury as other cases in court. [C. L. 2025.]

Appeal Not to Hinder Work

SEC. 2560. The prosecution of any appeal shall not hinder, delay or prevent the appellee from exercising all the rights and privileges mentioned in section 2557; *Provided*, That the appellee shall file with the clerk of the court in which the appeal is pending a bond with sufficient sureties to be approved by the clerk, in double the amount of the assessment appealed from, conditioned that the appellee shall pay to the appellant whatever amount he may recover in the action, not exceeding the amount of such bond. C. L. 2026.]

Appellee to Pay Certain Costs

SEC. 2561. If the appellant recover fifty dollars more damages than the

commissioners shall have awarded, or the appellee shall offer to allow judgment against him to be taken, the appellee shall pay the costs of the appeal; otherwise the appellant shall pay the costs. [C. L. 2027.]

Costs and Expenses, by Whom Paid

SEC. 2562. The costs and expenses under the provisions of this act, except as herein otherwise provided, shall be paid by the party making the application; *Provided, however*, That if the applicant shall before the commencement of such proceeding have tendered to the parties owning or occupying such lands or mining claims a sum equal to or more than the amount of damages assessed by the commissioners, then all of the costs and expenses shall be paid by the party or parties owning the lands or claims affected by such right of way, and who appeared and resisted the claims of the applicants. [C. L. 2028.]

WATER RIGHTS

Persons Holding Land Have Right to Water

SEC. 2563. Any person or persons, corporation or company, who may have or hold a possessory right or title to any mineral or agricultural lands within the limits of this State shall be entitled to the usual enjoyment of the waters of the streams or creeks in said State for mining, milling, agricultural or domestic purposes; *Provided*, That the right to such use shall not interfere with any prior right or claim to such waters when the law has been complied with in doing the necessary work. [C. L. 2029.]

Right of Way for Conducting Water

SEC. 2564. When any persons, corporation or company owning or holding lands as provided in section twenty hundred and twenty-nine shall have no available water facilities upon the same, or whenever such lands are too far removed from any stream or creek to so use the waters thereof as aforesaid, such person or persons, corporation or company shall have the right of way through and over any tract or piece of land for the purpose of conducting and conveying said water by means of ditches, dykes, flumes or canals, for the purpose aforesaid. [C. L. 2030.]

Right of Way Limited

SEC. 2565. Such right to dig and construct such ditches, dykes, flumes and canals over and across the lands of another shall only extend to so much digging, cutting or excavation as may be necessary for the purposes required. [C. L. 2031.]

Controversy — How Determined

SEC. 2566. In all controversies respecting rights to water under the provisions of this act, the same shall be determined by the date of appropriation as respectively made by the parties, whether for mining, milling, agricultural or domestic purposes. [C. L. 2032.]

Deterioration Not to be Considered

SEC. 2567. The waters of the streams or creek of the State may be made available to the full extent of the capacity thereof for mining, milling, agricultural or domestic purposes, without regard to deterioration in quality or

diminution in quantity, so that the same do not materially affect or impair the rights of the prior appropriator. [C. L. 2033.]

Penalty for Damaging Lands

SEC. 2568. Any person or persons, corporation or company damaging or injuring the lands or possessions of another by reason of cutting or digging ditches or canals or erecting flumes as provided by section 2564 the party so committing such injury or damage shall be liable to the party so injured for the actual damage occasioned thereby. [C. L. 2034.]

Abandoned Water Right — Bridging Ditches

SEC. 2569. This article shall not be so construed as to impair or in any way or manner interfere with the rights of parties to the use of the waters of such streams or creeks acquired before the passage of this article: *Provided*, That all water rights or ditches that have not been used or worked upon for one year next prior to the passage of this article shall be deemed abandoned and forfeited and subject to appropriation anew. Any person or persons, corporation or company who may dig any ditch or canal, dyke or flume over or across any public road, trail or highway, or who use the waters of such ditch, dyke, flume or canal shall be required to bridge the same and keep the same in good repair at such crossing or other places where the water from any such ditch, dykes, flumes, or canals may flow over or in anywise injure any road, trail or highway, either by bridges or otherwise. [C. L. 2035.]

Failure to Comply with Law

SEC. 2570. Any person or persons, corporation or company offending against section 2569, on conviction thereof shall forfeit and pay for every such offense a penalty of not less than twenty-five dollars nor more than one hundred dollars, to be recovered with costs of suit in civil action in the name of the State of South Dakota, before any court having jurisdiction. One-half of the fine so collected shall be paid into the county treasury of the county in which the offense was committed, and the other half shall be paid to the person or persons informing the nearest magistrate that such offense has been committed. All such fines and costs shall be collected without stay of execution, and such defendant or defendants may by order of the court be confined in the county jail until such fine and costs have been paid. [C. L. 2036.]

Manner of Locating Water Rights

SEC. 2571. Any person or persons, corporation or company appropriating the waters of any stream or creeks in this State shall turn the water from the channel of such creek or stream and construct at least twenty feet of the ditch or flume within thirty days from the date of appropriation, and turn the water therein, and construct at least twenty rods of said ditch or flume, if needed, within six months from the date of such appropriation, and turn the water therein; and within twenty days from the date of location the locator or locators of such water right shall file a location certificate thereof with the register of deeds in the proper county within which such water right is situated; a copy of such certificate shall be posted at or near the head of such ditch, flume or canal, and shall contain the name or names of the loca-

tors, the date of location, number of inches of water claimed or appropriated, and the purpose of the appropriation; and in no case shall the number of inches of water exceed the conveying capacity of the first twenty feet of the flume or ditch, nor shall said ditch or flume be enlarged to the prejudice or injury of a subsequent appropriator before such enlargement. [C. L. 2037.]

When Abandoned

SEC. 2572. On failure to commence the construction of such ditch or flume for sixty days after location, and prosecute such ditch, canal or flume to a final completion without unnecessary delay, such appropriation shall be deemed abandoned. [C. L. 2038.] Extracts from Political Code, 1903.

[The following law, enacted by the legislature of South Dakota at its 1907 session, is general in application to all corporations but was introduced by a member from the Black Hills and intended specially to prevent and punish fraudulent representations on behalf of wildcat mining companies.]

Fraudulent Representations Relating to the Stocks or Bonds of Incorporated Companies

Any superintendent, director, secretary, manager, agent, or other officer of any corporation formed or existing under the laws of this state or transacting business in the same, and any person pretending or holding himself out as such superintendent, director, secretary, manager, agent or other officer who shall wilfully subscribe, sign, endorse, verify, or otherwise assent to the publication, either generally or privately, to the stockholders or other persons dealing with such corporation or its stock knowing the same to be untrue or wilfully and fraudently issues exaggerated report, prospectus, account, statement of operations, values, business, profits, expenditures or prospects or other paper or document intended to produce, or give, or having a tendency to produce or give, to the shares of stock in such corporation a greater value or less apparent or market value than they really possess, or with the intention of defrauding any particular person or persons, or the public, or persons generally, shall be deemed guilty of a felony, and on conviction thereof shall be punished by imprisonment in state prison, or a county jail, not exceeding two years, or by fine not exceeding five thousand dollars, or by both. [Approved March 7, 1907.]

UTAH

Extent. — No Location to be Made until Discovery of Vein

SEC. 1. A mining claim, whether located by one or more persons, may equal, but shall not exceed, one thousand five hundred feet in length along the vein or lode; but no location of a mining claim shall be made until the discovery of the vein or lode within the limits of the claim located. Any lode mining claim may extend three hundred feet on each side of the middle of the vein at the surface, except where adverse rights render a lesser width necessary. The end lines of each claim must be parallel.

Monument — Notice

SEC. 2. The locator, at the time of making the discovery of such vein

or lode, must erect a monument at the place of discovery, and post thereon his notice of location, which notice shall contain: 1st, the name of the lode or claim; 2d, the name of the locator or locators; 3d, the date of the location; 4th, if a lode claim, the number of linear feet claimed in length along the course of the vein each way from the point of discovery; with the width on each side of the center of the vein, and the general course of the vein or lode, as near as may be, and such a description of the claim, located by reference to some natural object or permanent monument as will identify the claim; 5th, if a placer or mill-site claim, the number of acres or superficial feet claimed, and such a description of the claim or mill site located by reference to some natural object or permanent monument as will identify the claim or mill site.

Boundaries Marked

SEC. 3. Mining claims and mill sites must be distinctly marked on the ground so that the boundaries thereof can be readily traced.

Filing Copy of Notice — Fee

SEC. 4. Within thirty days from the date of posting the location notice upon the claim, the locator or locators, or his or their assigns, must file for record in the office of the county recorder of the county in which such claim is situated, if said claim be situated without and beyond an original mining district, a substantial copy of such notice of location. Such county recorder shall charge and collect a fee of seventy-five cents for filing and recording and indexing and abstracting such notice; *Provided*, That such notice of location shall not be abstracted unless a subsequent conveyance affecting the same property be filed for record, when said notice shall be abstracted.

Notice of Assessment Work Being Done

SEC. 5. Every person or company owning a group of claims and doing the development or assessment work, for said group at one point, shall post a notice upon each claim at the discovery monument stating where such work is being done, and also post a notice at the entrance of the workings, where said work is done, stating the name of the claims for which the work is done.

Filing Affidavit of Work Done

SEC. 6. The owner of any quartz lode or placer mining claim who shall do or perform or cause to be done or performed the annual labor or improvements required by the laws of the United States, in order to prevent a forfeiture of the claim, must, within thirty days after the completion of such work or improvements, file in the office of the county recorder in which the greater part of the mining district, in which such claim is located, is situated, his affidavit or an affidavit or affidavits of the person or persons who performed or directed such labor or made or directed such improvements, and shall file a duplicate thereof with the district mining recorder of the district in which said claim is situated, showing, 1st, the name of the claim and where situated; 2d, the number of days' work done and the character and value of the improvements placed thereon; 3d, the date or dates of performing said labor and making said improvements and number of cubic feet of earth or rock removed; 4th, at whose instance or request said work was done or improvements made; 5th, the actual amount paid for said labor and improvements,

and by whom paid, when the same was not done by the owner or owners of said claim.

Such affidavits or duly certified copies thereof shall be prima facie evidence of the facts therein stated.

Reorganization of Mining Districts

SEC. 7. Mining districts may be organized, and all existing districts may be reorganized and the rules and regulations of the said mining district shall govern the said district according to the laws of the United States, in cases where a district organization is desired; *Provided*, That the nearest boundary line of any mining district shall not be within ten miles from the county recorder's office of any county.

Copying Records — Expense

SEC. 8. Upon application of the district mining recorder of any mining district to the board of county commissioners of the county having in custody the records of the said mining district, the said board of county commissioners shall cause the records of such district to be copied by the county recorder and shall cause all records of documents pertaining to district mining records, recorded since June 4th, 1896, up to the time of delivery, to be recorded in the original records of the mining district in which the property is situated, and the original records, when so amended, shall be delivered to such district mining recorder. The copy so made shall remain in the office of the county recorder, and shall be considered as the original record. One-half of the expense of copying such records shall be paid out of the county treasury and one half shall be paid out of the State treasury.

Duplicate Notice of Location — Fee — Penalty

SEC. 9. It shall be the duty of every district mining recorder to require every person depositing for record a notice of location to make a duplicate copy thereof, which copy said mining recorder shall carefully compare with the original and mark "duplicate" and endorse thereon his name, and the date and hour and fact of filing in his office of the original. He shall, at the time of filing the duplicate notice with the original, collect, in addition to his own fee, the sum of seventy-five cents, which shall be the fee for the county recorder for recording such duplicate. He shall immediately deposit the duplicate copy with the county recorder of the county in which the greater part of the said mining district is located for record, or forward the same to him by mail or express, or in such other manner as will ensure safe transit and delivery. The fee of seventy-five cents shall accompany the duplicate. The county recorder shall record said duplicate with the endorsements thereon for the said fee. The record of said duplicate notice in the office of the county recorder shall be considered an original record. Every person neglecting or refusing to comply with any of the provisions of this section shall be deemed guilty of a misdemeanor, and, upon conviction thereof shall be punished by a fine not exceeding five hundred dollars or by imprisonment in the county jail not exceeding six months, or by both such fine and imprisonment.

Copies of Notices to be Received as Evidence

SEC. 10. Copies of notices of mining claims, mill sites and tunnel sites

heretofore recorded in the records of the several mining districts, and copies of the mining rules and regulations in force in the several mining districts, in like manner recorded, heretofore duly certified by the mining recorder, shall be receivable in all tribunals and before all officers of this State as prima facie evidence.

SEC. 11. Where books, records and documents pertaining to the office of district mining recorder have been or shall hereafter be deposited in the office of any county recorder of this State, such county recorder is authorized to make and certify copies therefrom, and such certified copies shall be receivable in all tribunals and before all officers of this State in the same manner and to the same effect as if such records had been originally filed or made in the office of the county recorder.

County Recorder to Record Rules — Certified Copies

SEC. 12. It shall be the duty of each county recorder to record the mining rules and regulations of the several mining districts in his county without fee, and certified copies of such records shall be received in all tribunals and before all officers of this State as prima facie evidence of such rules and regulations, and it shall be his duty to record, index and abstract, all mining location notices presented for record, for a fee not to exceed seventy-five cents for each notice, and to file and index all affidavits of labor presented for filing affecting one mining claim for a fee not to exceed twenty-five cents; provided, that when an affidavit of labor contains the name of more than one mining claim, an additional fee of ten cents shall be charged for each additional claim named therein.

Recorder of Mining District to Give Bond

SEC. 13. The recorder of each mining district shall take the oath of office and give bond with sureties in the penal sum of one thousand dollars. Such bond must be approved by the district judge and filed in the office of the county clerk of the county in which the greater part of the said mining district is located. Where the recorder of any mining district appoints a deputy the recorder and his bondsmen shall be responsible for the official acts of such deputy.

District Recorder to Make Copies

SEC. 14. It shall be the duty of the recorder of a mining district upon request and payment, or tender of the fees therefor, to make and deliver to any person requesting the same, duly certified copies of any records in his custody, and for a failure so to do, or for receiving larger fees for any such service than those provided, he shall be deemed guilty of a misdemeanor.

Vacancy — County Recorder to Receive Records

SEC. 15. Whenever there is a vacancy in the office of the recorder of any mining district, or the person holding such office shall remove from the district, leaving therein no qualified successor in office; or whenever from any cause there is no person in such district authorized to retain the custody and give certified copies of the records, it shall be the duty of the person having custody of the records to deposit the same in the office of the county recorder of the county in which such mining district or the greater part thereof is

situated, and the county recorder shall receive such records, and is hereby authorized to make and certify copies therefrom, and such certified copies shall be received in evidence in all courts and before all officers and tribunals. The production of a certified copy so made shall be, without other proof, evidence that such records were properly in the custody of the county recorder.

Fees of Mining Recorder

SEC. 16. Every mining recorder shall be allowed the same fees for recording and making copies of any record in his custody as are allowed by law to county recorders for similar services; *Provided*, That fees for recording location notices may equal but shall not exceed one dollar for each notice.

[Secs. 1–16 approved Mar. 3, 1899, Session Laws, 1899, p. 26.]

EMINENT DOMAIN

Exercised in Behalf of What Uses

SEC. 3588. Subject to the provisions, chapter 65, R. S. 1898, the right of eminent domain may be exercised in behalf of the following public uses: 1. All public uses authorized by the Government of the United States. 2. Public buildings and grounds for the use of the State, and all other public uses authorized by the Legislature. 3. Public buildings and grounds for the use of any county, incorporated city or town, or school district; reservoirs, canals, aqueducts, flumes, ditches, or pipes for conducting water for the use of the inhabitants of any county, or incorporated city or town, or for draining any county or incorporated city or town; for raising the banks of streams, removing obstructions therefrom, and widening, deepening, or straightening their channels; for roads, streets, and alleys, and all other public uses for the benefit of any county, incorporated city or town or the inhabitants thereof. 4. Wharves, docks, piers, chutes, booms, ferries, bridges, toll roads, by-roads, plank and turnpike roads, roads for transportation by traction engines or road locomotives, roads for logging or lumbering purposes, and railroads and street railways for public transportation. 5. Reservoirs, dams, water-gates, canals, ditches, flumes, tunnels, aqueducts, and pipes for supplying persons, mines, mills, smelters, or other works for the reduction of ores, with water for domestic or other uses, or for irrigating purposes, or for draining and reclaiming lands, or for floating logs and lumber on streams not navigable. 6. Roads, railroads, tramways, tunnels, ditches, flumes, pipes, and dumping places to facilitate the milling, smelting, or other reduction of ores, or the working of mines; outlets, natural or otherwise, for the deposit or conduct of tailings, refuse, or water from mills, smelters, or other works for the reduction of ores, or from mines; mill-dams; natural gas or oil pipe lines, tanks, or reservoirs; also an occupancy in common by the owners or possessors of different mines, mills, smelters, or other places for the reduction of ores, of any place for the flow, deposit, or conduct of tailings or refuse matter. 7. By-roads leading from highways to residences and farms. 8. Telegraph, telephone, electric light, and electric power lines, sites for electric power plants. 9. Sewerage of any city or town, or of any settlement of not less than ten families, or of any public building belonging to the State, or of any college or university. 10. Canals, reservoirs, dams, ditches, flumes, aqueducts, and pipes for supplying

and storing water for the operation of machinery for the purpose of generating and transmitting electricity for power, light or heat. 11. Cemeteries or public parks. 12. Pipe lines for the purpose of conducting any and all liquids connected with the manufacture of beet sugar.

[Approved March 5, 1901, S. L. p. 19.]

[For procedure see Sections 3589 to 3608.]

Lease of State Mineral Lands

Mineral Lands to be Leased

Sec. 2370. Any State lands upon which stone, coal, coal oil, gas, or any mineral may be found, whether such land has theretofore been leased for a term of years or not, may be leased for the purpose of obtaining therefrom such stone, coal, coal oil, gas, or any mineral, for such length of time and conditioned upon the payment to the State board of land commissioners of such royalty upon the product, as the State board of land commissioners may determine. [1897, p. 88.]

Rules Regarding Leasing

Sec. 2371. The State board of land commissioners is hereby authorized to make all necessary rules and regulations to carry the foregoing section into effect.

Approved March 3, 1899, Session Laws of 1899, p. 30.

WASHINGTON

Mining Claims and Rules of Mining Districts

Location Record

Section 1. The discoverer of a lode shall within ninety (90) days from the date of discovery record in the office of the auditor of the county in which such lode is found a notice containing the name or names of the locators, the date of the location, the number of feet in length claimed on each side of the discovery, the general course of the lode and such a description of the claim or claims located by reference to some natural object or permanent monument as will identify the claim.

Location and Marking of Claims

Sec. 2. Before filing such notice for record, the discoverer shall locate his claim by first sinking a discovery shaft upon the lode, to the depth of ten (10) feet from the lowest part of the rim of such shaft at the surface, and shall post at the discovery at the time of discovery a notice containing the name of the lode, the name of the locator or locators, and the date of discovery, and shall mark the surface boundaries of the claim by placing substantial posts or stone monuments bearing the name of the lode and date of location; one post or monument must appear at each corner of such claim; such posts or monuments must be not less than three (3) feet high; if posts are used, they shall be not less than four inches in diameter, and shall be set in the ground in a substantial manner. If any such claim be located on ground that is covered wholly or in part with brush or trees, such brush shall be cut and trees

be marked or blazed along the lines of such claim to indicate the location of such lines.

Discovery

SEC. 3. Any open cut or tunnel having a length of ten (10) feet, which shall cut a lode at the depth of ten (10) feet below the surface, shall hold such lode the same as if a discovery shaft were sunk thereon, and shall be equivalent thereto.

Definition

SEC. 4. The term "lode" as used in this Act shall be construed to mean ledge, vein or deposit.

Amendment

SEC. 5. If at any time the locator of any quartz or lode mining claim heretofore or hereafter located, or his assigns, shall learn that his original certificate was defective, or that the requirements of the law had not been complied with before filing, or shall be desirous of changing his surface boundaries, or of taking in any additional ground which is subject to location, or in any case the original certificate was made prior to the passage of this law, and he shall be desirous of securing the benefits of this act, such locator or his assigns may file an amended certificate of location, subject to the provisions of this act, regarding the making of new locations.

Affidavit of Labor

SEC. 6. Within thirty (30) days after the expiration of the period of time fixed for the performance of annual labor, or the making of improvements upon any quartz or lode mining claim or premises, the person in whose behalf such work or improvement was made or some person for him knowing the facts, shall make and record in the office of the county auditor of the county wherein such claims are situate an affidavit or oath of labor performed on such claim. Such affidavit shall state the exact amount and kind of labor, including the number of feet of shaft, tunnel or open cut made on such claim, or any other kind of improvements allowed by law or by rules of mining districts made thereon.

Evidence

SEC. 7. Such affidavit when so recorded shall be *prima facie* evidence of the performance of such labor or the making of such improvements, and such original affidavit after it has been recorded, or a certified copy of record of same, shall be received as evidence accordingly by all the courts of this State.

Relocation

SEC. 8. The relocation of forfeited or abandoned quartz or lode claims shall only be made by sinking a new discovery shaft and fixing new boundaries in the same manner and to the same extent as is required in making a new location, or the relocator may sink the original discovery shaft ten feet deeper than it was at the date of commencement of such relocation, and shall erect new, or make the old monuments the same as originally required; in either case a new location monument shall be erected, and the location certificate shall state if the whole or any part of the new location is located as abandoned property.

Cascade Mountains

SEC. 9. The provision herein relating to discovery shafts shall not apply to any mining location west of the summit of the Cascade Mountains.

Placers

SEC. 10. The discoverer of placers or other forms of deposit subject to location and appropriation under mining laws applicable to placers shall locate his claim in the following manner:

First. He must immediately post in a conspicuous place at the point of discovery thereon a notice or certificate of location thereof, containing (*a*) the name of the claim; (*b*) the name of the locator or locators; (*c*) the date of the discovery and posting of the notice hereinbefore provided for, which shall be considered as the date of the location; (*d*) a description of the claim by reference to legal subdivisions of sections, if the location is made in conformity with the public surveys, otherwise a description with reference to some natural object or permanent monument as will identify the claim, and where such claim is located by legal subdivisions of the public surveys, such location shall, notwithstanding that fact, be marked by the locator upon the ground the same as the other locations.

Second. Within thirty (30) days from the date of such discovery, he must record such notice or certificate of location in the office of the auditor of the county in which such discovery is made, and so distinctly mark his location on the ground that its boundaries may be readily traced.

Third. Within sixty (60) days from the date of the discovery, the discoverer shall perform labor upon such location or claim in developing the same to an amount which shall be equivalent in the aggregate to at least ten (10) dollars' worth of such labor for each twenty acres, or fractional part thereof contained in such location or claim — "provided, however, that nothing in this subdivision shall be held to apply to lands located under the laws of the United States as placer claims for the purpose of the development of petroleum and natural gas and other natural oil products."

Fourth. Such locator shall, upon the performance of such labor, file with the auditor of the county an affidavit showing such performance, and generally the nature and kind of work so done.

Evidence

SEC. 11. The affidavit provided for in the last section, and the aforesaid placer notice or certificate of location, when filed for record shall be *prima facie* evidence of the facts therein recited. A copy of such certificate, notice or affidavit certified by the county auditor shall be admitted in evidence in all actions or proceedings with the same effect as the original, and the provisions of sections six (6) and seven (7) of this act shall apply to placer claims as well as lode claims.

Future Locations

SEC. 12. All locations of quartz or placer formations or deposits hereafter made shall conform to the requirements of this act in so far as the same are respectively applicable thereto.

Mining Districts

SEC. 13. Any mining district organized in the State of Washington in

accordance with the laws of the United States, shall have power to make rules and regulations for such mining district, providing such rules and regulations do not conflict with the laws of the State of Washington or of the United States.

Road Building

SEC. 14. Any mining district shall have the power to make road building to mining claims within such district applicable as assessment work, or improvement upon such claims: *Provided*, That rules pertaining to such road building shall be made only at a public meeting of the miners of such district regularly called by the mining recorder of such district: *Provided further*, That such meeting shall be attended by at least twelve (12) property holders of such district, and that no such rule can be made without the assent of the majority of the property holders of such district, who are present at such meeting. Such meeting to designate where, when and how such road work shall be done, and shall designate some one of their number who shall superintend such road building or construction, and who shall receipt for such labor to the performer thereof, such receipts to be filed with the county auditor of the county in which such work is performed by the holder or holders of such receipts, and shall be received as *prima facie* evidence of labor performed as annual assessment work upon such claim or claims, as may be designated by an affidavit or oath of labor as provided for in section six (6) of this act: *Provided*, That nothing in this act can be construed as being mandatory upon any owner or holder of mining property to perform labor upon any such road.

Approved March 8, 1899. Session Laws 1899, p. 69.

LOCATION AND POSSESSION OF MINING LODES

Governed How

[Section numbers are those of Ballinger's Annotated Codes and Statutes of Washington: 1897.]

SEC. 3151. All mining claims upon veins or lodes of quartz, or other rock in place, bearing gold, silver, or other valuable mineral deposits heretofore located, shall be governed as to length along the vein or lode by the customs, regulations, and laws in force at the date of such location. — 1888. 160, 1; 1 H., 2210.

Extent — Restrictions

SEC. 3152. A mining claim located upon any vein or lode of quartz or other rock in place, bearing gold, silver, or other valuable mineral deposits after the approval of this act by the Governor, whether located by one or more persons, may equal but shall not exceed fifteen hundred feet in length along the vein or lode; but no location of a mining claim shall be made until the discovery of the vein or lode within the limits of the claims located. No claims shall extend more than three hundred feet on each side of the middle of the vein at the surface, nor shall any claims be limited by any mining regulations to less than fifty feet of surface on each side of the middle of such vein or lode at the surface, excepting where adverse rights, existing at the date of the approval of this act, shall make such limitation necessary.

The end lines of each claim shall be parallel to each other. — 1888, 160, 2; 1 H., 2211.

Exclusive Right to What

SEC. 3153. The locators of all mining locations heretofore made, or hereafter made under the provisions of this article, on any mineral vein, lode or ledge on the public domain, and their heirs and assigns, so long as they comply with the laws of the United States, and the territorial and local laws relating thereto, shall have the exclusive right to the possession and enjoyment of all surface included within the lines of their location, and of all veins, lodes, and ledges throughout their entire depth, and the top or apex of which lies within the surface lines of such location, extending downward vertically, although such veins, lodes, or ledges may so far depart from the perpendicular in their course downward as to extend outside of the vertical side line of said surface location. — 1888, 160, 3; 1 H., 2212.

Conditions for Holding

SEC. 3154. In order to hold the possessory right to a location of a mine not less than one hundred dollars' worth of work must be performed or improvements made thereon annually: *Provided*, That the period within which the work required to be done annually on all unpatented claims so located shall commence on the first day of January succeeding the date of location of such claim. — 1893, 75, 1.

Recorder

SEC. 3155. The miners of each mining district may elect a recorder of the said district. When so elected, such recorder shall provide books of records in which it shall be his duty to record all notices of locations or transfers, bonds, conveyances or assignments of mining claims within his district when the same shall be presented to him for record. Such records are hereby declared to be public records open to inspection, and shall have the same force and effect, so far as notice is concerned, as the records of deeds and mortgages in this State. — 1888, 161, 5: 1 H., 2214.

Election. — Powers and Duty of Recorders

SEC. 3156. When a recorder shall be elected, as provided in the last preceding section of this article, he shall hold his office for a term of one year from the date of his election, and until his successor is elected and qualified. He shall, immediately after his election, file with the county auditor of the county within which his district is situated, an oath to the effect that he will faithfully discharge the duties of his office. He shall be a certifying officer, and certified copies of his records shall have the same force and effect as similar papers certified by other officers of this State. His fees shall be the same as those of the county auditor for similar work, and should the office of recorder in any mining district at any time become vacant, it shall be the duty of the person last holding said office, and of any person into whose possession the same may come, to forthwith transmit all the records, papers and files of the said office to the auditor of the county in which such district is located, and such auditor shall thereafter keep the same as part of the records and files of his office. — 1888, 161, 6; 1 H., 2215.

Where Location Notices Recorded

SEC. 3157. Inasmuch as the last two preceding sections of this article leave the election of a recorder for a mining district optional with the miners thereof, all location notices, bonds, assignments and transfers of mining claims shall be recorded in the office of the county auditor of the county where the same is situated within thirty days after the execution thereof: *Provided*, That all records of mining claims and of assignments, deeds, bonds and transfers heretofore made by any recorder of any mining district, or by any county auditor, are hereby declared to be valid and to have the same force and effect as records made in pursuance of the provisions of this act. — 1888, 161, 7; 1 H., 2216.

RELATING TO MONUMENTS AND NOTICES ON MINING CLAIMS

Mining Monuments

SEC. 1. Any person who shall wilfully and maliciously deface, remove, injure or destroy any location stake, side post, corner post, landmark or monument, or any other land boundary monument, the same having been erected or implanted for the purpose of designating the location, boundary or name of any mining claim, lode or vein of mineral, or for posting the name of the discoverer, locator or owner or date of discovery thereon; or any person who shall so deface, obliterate, remove or destroy any notice having been placed or posted upon any mining claim for the purpose of marking or identifying the same, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not less than one hundred dollars ($100) nor more than five hundred dollars ($500), or by imprisonment in the county jail not exceeding one year; *Provided, however*, That the provisions of this act shall not apply to abandoned mining claims.

Approved March 16, 1897.

TO PERMIT INDIANS TO SELL PROPERTY

Alienation of Real Estate

SEC. 1. Any Indian who owns within this State any land or real estate allotted to him by the Government of the United States, may, with the consent of Congress, either special or general, sell and convey by deed made, executed and acknowledged before any officer authorized to take acknowledgments to deeds within this State, any stone, mineral, petroleum or timber contained on said land, or the fee thereof, and such conveyance shall have the same effect as a deed of any other person or persons within this State; it being the intention of this act to remove from Indians residing in this State all existing disabilities relating to alienation of their real estate.

Approved March 13, 1899. Session Laws 1899, p. 155.

RIGHT OF WAY FOR DITCHES, CANALS AND FLUMES

Water — Public Use

SEC. 1. That any person, corporation or association of persons is entitled to take from the natural streams or lakes in this State water for the purposes of irrigation and mining, not theretofore appropriated or subject to rights existing at the time of the adoption of the constitution of this State, subject

to the conditions and regulations imposed by law: *Provided*, That the use of water at all times shall be deemed a public use, and subject to condemnation as may from time to time be provided for by the Legislature of this State.

Riparian Owners

SEC. 2. All persons who claim, own or hold possessory right or title to any land, or parcel of land, or mining claim, within the boundaries of the State of Washington, when such lands, mining claims or any part of the same are on the banks of any natural stream of water, shall be entitled to the use of any water of said stream not otherwise appropriated for the purposes of mining and irrigation to the full extent of the soil for agricultural purposes.

Right of Way

SEC. 3. When any person owning claims, lands or mining claims, as specified in the foregoing section, is not a riparian proprietor, or being such has not sufficient frontage on said stream, lake, artificial stream, ditch or reservoir, to obtain a sufficient flow of water to irrigate his land or use on his mining claim, he shall be entitled to the right of way through the farms or tracts of lands or other mining claims which lie between him and said stream, lake, artificial stream, ditch or reservoir, or the farms, tracts of lands or mining claims which lie above and below him on said stream, lake, artificial stream, ditch or reservoir.

Extent of Right of Way

SEC. 4. Such right of way shall extend only to a ditch sufficient for the purpose required together with the right of ingress and egress to construct, maintain and repair the same; and whenever any person or persons find it necessary to convey water for the purposes of irrigation or mining through the improved or occupied lands of another, he or they shall select for the line of such ditch through such property the shortest and most direct route practicable upon which can be constructed with uniform or nearly uniform grade, and discharging the water at a point where it can be conveyed to and used upon the land or lands or mining claim of the person or persons constructing such ditch, canal or works.

Condemnation of Right of Way

SEC. 5. Upon the refusal of the owner of the lands, lessees, or those in possession, through which it is proposed to run said canal, ditch or works to permit the passage of the same through their property, the person or persons desiring the right of way for such ditch, canal or works may proceed to condemn and take the right of way therefor as hereinafter provided.

Condemnation Proceeding

SEC. 6. In case of the refusal of the owners or claimants of any lands or mining claims through which such ditch, canal or other works are proposed to be made or constructed, to allow the right of way or the passage thereof, the persons, company or corporation desiring the right of way shall file in the superior court of the county a complaint describing the land or mining claim to be crossed, the size of the ditch, canal or works, the quantity of land required to be taken and the value of the land and damages to the property,

setting forth the names of the owners or reputed owners or parties interested in the lands to be crossed, and praying that the right of way be granted. A summons shall issue and be served upon all parties interested, as in all other cases of civil nature. In case the defendant fails to appear, the court shall, when the cause shall come on to be heard, impanel a jury in the cause, and they shall determine the value of the land occupied by said ditch, canal or works and the damages, and, upon the return of the verdict, the court shall enter a decree, directing that the right of way for the ditch, canal or works be established according to the description in the complaint, and that the plaintiff shall pay to the clerk of the court the full amount of the value of the land and damages found by the jury, before the plaintiff shall begin work on said ditch, canal or works.

Defendant's Allegations

SEC. 7. That whenever the defendant shall appear in the cause, he shall allege in his answer the value of the land proposed to be used by said ditch, canal or works, and the jury shall determine the value, and the proceedings shall be had as in the preceding sections: *Provided*, That plaintiff shall not be required to reply to the answer of the defendant, but the sole issue to be determined by the jury shall be the value of the land to be occupied by said ditch, canal or works, and the damages thereto.

Definitions

SEC. 8. The word person, whenever used in this act, shall be construed to mean either a natural person, an association, or corporation, and the word he shall be construed to mean she, it, or they, and the word ditch shall be construed to include and mean dike, flume-way and irrigating canal.

Liberal Construction

SEC. 9. The provisions of this act shall be liberally construed so that the ultimate object and the intent of this act shall be fully carried out.

Approved March 14, 1899. Session Laws 1899, p. 261.

RELATING TO THE MINERAL LANDS OF THE STATE

Mining Leases — Empowering Commissioner to Lease

SEC. 2212. The commissioner of public lands of the State of Washington is hereby authorized to execute leases and contracts for the mining of gold, silver, copper, lead, cinnabar or other valuable minerals, except coal, from any land now belonging to the State or from any lands to which the State may hereafter acquire title, subject to the conditions hereinafter provided.

Proceeding to Secure Lease

SEC. 2213. Any citizen of the United States finding precious minerals upon any lands belonging to the State of Washington may apply to the commissioner of public lands for a lease of any amount not to exceed eighty acres for prospecting purposes, provided that said applicant has posted up location notice and set corner posts and marked boundary lines as required by the mining laws of the State of Washington: *Provided*, Any person, persons, or corporations to whom a lease or contract has been issued prior to the passage of this act may, by applying to the Commissioner of Public Lands, have the bound

aries of their mineral claims or lots changed to conform to the section lines as surveyed by the U. S. surveyors: *Provided*, The changing of boundaries does not infringe on the rights of any other lease holder or assignee, and shall pay a fee according to the mineral area which they may obtain.

Mining Locations — Manner of Making

SEC. 2214. The manner of locating a mineral claim upon State land shall be similar to the State law regulating locations of mineral claims on government land: *Provided*, That any citizens that have found minerals on State lands previous to the passage of this act, and have posted up notice setting forth the dimensions according to the mining law of the United States and the State of Washington, shall have prior right to lease the same, and shall have ninety (90) days after the passage of this act to make application to the commissioner of public lands for a lease.

Necessary Timber Privileges

SEC. 2215. The lessee may cut and use the timber found upon said premises for fuel and construction of buildings, required in the operation of any mine or mines on the premises; also the timber necessary for drains, tramways and supports for such mine or mines, and for no other purpose.

Payment — Prospecting

SEC. 2216. Before any lease shall be granted, the applicant shall pay to the State Treasurer the sum of five dollars for each forty acres or fraction thereof. The holder of a mineral lease, secured as above, shall have two years to develop said mine or mines: *Provided*, That no more than five tons of ore shall be removed therefrom, for assaying or testing purposes, until a contract as hereinafter provided shall have been executed.

(As amended, March 18, 1901.)

SEC. 4. Within sixty days prior to the expiration of the lease, the lessee may apply to the Commissioner of Public Lands for a new lease. Therefore the Commissioner of Public Lands shall give said applicant a prior right, and shall, upon the expiration of the old lease, issue a new lease to the former lessee on terms as may be provided by law.

(As amended March 18, 1901.)

LEASING OF MINERAL LANDS BELONGING TO THE STATE

Contract

SEC. 6. At any time prior to the expiration of said lease, the lease holder, or any assignee thereof, shall have the right to obtain from the said commissioner of public lands a contract which shall bind the State of Washington, as the party of the first part, and the person, persons or corporations to whom said contract shall issue as the party of the second part, in a mutual observance of the obligations and conditions as specified therein. (The contract provided for in this act shall be as follows:)

This indenture, made this day of , A.D. one thousand eight hundred and , by and between the State of Washington, party of the first part, and , party of the second part,

Witnesseth, that the party of the first part, in consideration of the sum of

ten dollars to it in hand paid by the party of the second part, being the first annual payment as provided for in Chapter 102, Section 7, of the Session Laws of 1897, the receipt whereof is hereby acknowledged, and in further consideration of the covenants and conditions herein contained, to be kept and performed by the part of the second part, does hereby contract, lease and demise to the part of the second part for a term of thirty years from and after the day of , one thousand eight hundred and , the following described land situated in the county of , in the State of Washington, viz.: , which premises are leased to the part of the second part for the purposes of exploring for, mining, taking out and removing therefrom, the merchantable shipping ore, containing copper, lead, silver, gold and other minerals, which is or which hereafter may be found on, in or under said land, together with the right to construct all buildings, make all excavations, openings, ditches, drains, railroads, wagon roads, smelters and other improvements upon said premises, which are or may become necessary or suitable for the mining or removal of ore containing copper, lead, silver, gold or other minerals from said premises, with the right, during the existence of this lease, to cut and use the timber found upon said premises for fuel, and so far also as may be necessary for the construction of buildings required in the operation of any mine or mines, on the premises hereby leased, as also the timber necessary for drains, tramways and supports for such mine or mines: *Provided, however*, That the part of the second part shall have the right at any time to terminate this agreement in so far as it requires the part of the second part to mine ore on said lands or to pay a royalty therefor, by giving written notice to the party of the first [part], which shall be served by leaving the same with the Commissioner of Public Lands, who shall officially, in writing, acknowledge the receipt of said notice, and the foregoing lease shall terminate sixty days thereafter, and all arrearages and sums which may be due under the same up to the time of its termination as set forth in said notice, shall be paid upon settlement and adjustment thereof. The party of the first part further agrees that the part of the second part shall have the right under this agreement to contract with others to work such mine or mines, or any part thereof, or to sub-contract the same, and the use of the said land or any part thereof, for the purpose of mining for ore, with the same rights and privileges as are herein granted to the said part of the second part."

As amended March 18, 1899. Session Laws 1899, p. 337.

Royalty

SEC. 2218. The terms and conditions on which the same may be mined shall be agreed upon by the commissioner of public lands and the lessee: *Provided*, That a royalty be paid to the State on the value of the gross output to an amount not less than two per cent. thereof and not more than five per cent. thereof; said royalty to be paid according to the provisions made in said lease.

WYOMING

TITLE 18, DIVISION 1, REVISED STATUTES

Organization of Mining District

SECTION 2533. In any mining district or in mining field of discovery of veins, leads, lodes or ledges, or of gold placers, petroleum fields, soluble salt deposits, or of any mineral lands whatever, or of any lands that are, or may be hereafter, opened to location under the laws governing mineral deposits, the miners may meet and organize and elect a recorder and make regulations not in conflict with the laws of the United States, or with the laws of this State governing the location, manner of recording and amount of annual work necessary to hold possession of a mining claim within the district, subject to the following requirements:

1. That any five miners having locations, or owning in part or in whole claims within the proposed district, shall give notice by at least three written or printed or partially written and partially printed notices, posted in prominent places within the proposed district, of a meeting called by them for organizing such district at a date at least ten days subsequent to the posting of such notices.

2. That the meeting thus called shall be attended by at least ten persons, all having locations or owning, in part or in whole, claims within the proposed district.

3. That the recorder elected for such an organized district shall hold his office until his successor is elected and qualified according to law. Such recorder is required to give bonds, with at least two sureties, to the people of Wyoming, in the penal sum of not less than one thousand dollars, for the faithful performance of his duties, and for the turning over of all books, papers, records, etc., of his office to his duly elected and qualified successor, which bond shall be approved by the judge of the district court and filed in the office of the county clerk and ex-officio register of deeds. The recorder of such a mining district may appoint a deputy for whose official acts he shall be responsible.

4. That no district need be organized if the majority at the meeting as hereinbefore provided so desire, but when a district is once organized it cannot be subdivided except in accordance with the local laws of the district, enacted at the regular or special meetings, or by action of the legislature of this State. In case of the abandonment of any district for any cause whatever it shall be the duty of the district recorder, as soon as practicable thereafter, to deposit all records and other papers, pertaining to his office, in the office of the county clerk and ex-officio register of deeds of the county in which such district is located.

5. Each mining district may regulate the fees to be charged by the local recorder for recording location certificates, affidavits of labor and all other instruments to be filed in the said recorder's office.

Copy of Laws and Proceedings to be Filed

SEC. 2534. A copy of all laws, and the proceedings of each mining district, shall be filed by the recorder of the district in the office of the county clerk and ex-officio register of deeds of the county in which the district is

situated, which shall be taken as evidence in any court having jurisdiction in the matter concerned under such laws or proceedings; and all such laws and proceedings of any mining district heretofore filed in the county clerk's office of the proper county, and transcripts thereof duly certified, shall have the like effect in evidence. Such copies of laws and proceedings shall be filed in the office of the said county clerk and ex-officio register of deeds by the recorder of each mining district within sixty days after the organization of each new mining district, or within sixty days after new laws were adopted or proceedings had.

Use of Water

SEC. 2535. Whenever any person, persons or corporation shall be engaged in mining or milling in this State, and in the prosecution of such business shall hoist or bring water from mines or natural water courses, such person, persons or corporation shall have the right to use such water in such manner and direct it into such natural course or gulch as their business interests may require; provided, that such diversion shall not infringe on vested rights. The provisions of this section shall not be construed to apply to new or undeveloped mines, but to those only which shall have been open and require drainage or other direction of water.

Mining Claims Subject to Right of Way

SEC. 2536. All mining claims or property now located, or which may hereafter be located within this State, shall be subject to the right of way of any ditch or flume, for mining purposes, or of any tramway, pack-trail or wagon road, whether now in use, or which may hereafter be laid out across any such location, claim or property; provided, always, that such right of way shall not be exercised against any mining location, claim or property duly made and recorded as herein required, and not abandoned prior to the establishment of any such ditch, flume, tramway, pack-trail or wagon road without the consent of the owner or owners, except in condemnation, as in the case of land taken for public highways. Consent to the location of the easements above enumerated over any mineral claim, location or property shall be in writing; and provided, further, that any such ditch or flume shall be so constructed that water therefrom shall not injure vested rights by flooding or otherwise.

Protection of Surface Proprietors

SEC. 2537. Where a mining right exists in any case and is separate from the ownership or right of occupancy to the surface, such owner or rightful occupant of the said surface may demand satisfactory security from the miner or miners, and, if such security is refused, such owner or occupant of the surface may enjoin the miner or miners from working such mine until such security is given. The order for such injunction shall fix the amount of the bond therefor.

Relocation Certificates

SEC. 2538. Whenever it shall be apprehended by the locator, or his assigns, of any mining claims or property heretofore or hereafter located, that his or their original location certificate was defective, erroneous, or that

the requirements of the law had not been complied with before the filing thereof, or shall be desirous of changing the surface boundaries of his or their original claim or location, or of taking in any part of an overlapping claim or location which has been abandoned, or in case the original certificate was made prior to March 6, 1888, and he or they shall be desirous of securing the benefit of this law, such locator or locators, or his or their assigns, may file an additional location certificate in compliance with and subject to the provisions of this chapter: *Provided, however*, that such relocation shall not infringe upon the rights of others existing at the time of such relocation, and that no such relocation, or other record thereof, shall preclude the claimant or claimants from proving any such title or titles as he or they may have held under any previous location.

Location Certificates Shall Describe but One Claim

SEC. 2539. No location certificate shall contain more than one claim or location, whether the location be made by one or more locators, and any location certificate that contains upon its face more than one location claim shall be absolutely void, except as to the first location named and described therein, and in case more than one claim or location is described together, so that the first one cannot be distinguished from the others, the certificate of location shall be void as an entirety.

Stealing Mining Claims — Penalty — Evidence

SEC. 2540. In all cases when two or more persons shall, through collusion or otherwise, associate themselves together for the purpose of obtaining possession of any lode, gulch or placer or other mineral claim or mining property within this State, then in the actual possession of another or others, by force and violence, or threats of violence, or by stealth, and shall proceed to carry out such purpose by making threats to and against the party or parties in possession, or who shall enter upon such lode, gulch, placer, or other mineral claim or mining property for the purposes aforesaid, or who shall enter upon or into mineral claim or mining property; or, not being on such mining claim or mineral property, but within hearing of the same, shall make any threats or any use of any language, signs, gestures, intended to intimadate any person or persons in possession or at work on the said claim or claims of mineral property, of whatever kind or nature, from continuing such possession or work thereon or therein, or to intimidate others from engaging to be employed thereon or therein, every such person or persons so engaging shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined in a penal sum not exceeding two hundred and fifty dollars, and be imprisoned in the county jail for not less than thirty days nor more than six months. On trial of any person or persons charged with any of the offenses enumerated in this section, the proof of a common purpose of two or more persons to unlawfully secure possession of any mining claim or mineral property within the State, or to intimidate any one in the possession of, or laborers at work on, any mining claim or mineral property aforesaid, accompanied or followed by any acts or utterances of such person or persons as herein enumerated, shall be sufficient evidence to convict any one committing such acts, although such

parties may not be associated or acting together at the time of the commission of such offenses.

Destroying Mining Property — Penalty

SEC. 2541. Any person or persons who shall unlawfully cut down, break down, level, demolish, destroy, injure, remove or carry away any sign, notice, post, mark, monument or fence upon or around any shaft, pit, hole, incline or tunnel, or any building, structure, machinery, implements or other property on any mining claim or mineral property, ground or premises, shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined a penal sum of money not less than fifty dollars nor more than one thousand dollars, or be imprisoned for not less than thirty days nor more than one year, or both, in the discretion of the court.

Mining Swindles — Penalty

SEC. 2542. Any person or persons who shall defraud, cheat, swindle or deceive any party or parties, in relation to any mine or mining property, by "salting," or placing or causing to be placed in any lode, placer or other mine any genuine metals or material representing genuine minerals, which are designed to cheat and deceive others, for the purpose of gain, whereby others shall be deceived and injured by such, shall be guilty of a felony, and upon conviction thereof shall be fined in a penal sum of not less than fifty dollars and not more than five thousand dollars, or imprisoned in the penitentiary for not more than three years, or both, in the discretion of the court.

Protection of Live Stock From Mining Shafts — Penalty for Failure to Protect

SEC. 2543. Every person, persons, company or corporation, who have already sunk mining shafts, pits, holes, inclines, upon any mining claim, or upon any mineral property, ground or premises, or who may hereafter sink such openings aforesaid, shall forthwith secure such shafts and openings against the injury or destruction of live stock running at large upon the public domain, by securely covering such shafts and other openings, as aforesaid, in a manner to render them safe against the possibility of live stock falling into them, or in any manner becoming injured or destroyed thereby; or by forthwith making a strong, secure and ample fence around such shafts and other openings aforesaid. Any person, persons, corporation or company that shall fail or refuse to fully comply with the provisions of this section shall be guilty of a misdemeanor, and on conviction thereof shall be liable for any damages sustained by injury or loss of live stock thereby.

Length of Lode Claim

SEC. 2544. The length of any lode mining claim located within Wyoming, shall not exceed fifteen hundred feet, measured horizontally along such lode or vein. Nor can the regulations of any mining district limit a locator to less than this length.

Width of Lode Claim

SEC. 2545. The width of any lode claim located within Wyoming shall not exceed three hundred feet on each side of the discovery shaft, the dis-

covery shaft being always equally distant from the side lines of the claims. Nor can any mining district limit the locator to a width of less than one hundred and fifty feet on either side of the discovery shaft.

Recording Mining Claims — Requisites of Certificate

SEC. 2546. A discoverer of any mineral lead, lode, ledge or vein shall, within sixty days from the date of discovery, cause such claim to be recorded in the office of the county clerk and ex-officio register of deeds of the county within which such claim may exist, by a location certificate which shall contain the following facts:

1. The name of the lode claim.
2. The name or names of the locator or locators.
3. The date of location.
4. The length of the claim along the vein measured each way from the center of the discovery shaft, and the general course of the vein as far as it is known.
5. The amount of surface ground claimed on either side of the center of the discovery shaft or discovery workings.
6. A description of the claim by such designation of natural or fixed object, or, if upon ground surveyed by the United States system of land survey, by reference to section or quarter-section corners, as shall identify the claim beyond question.

Imperfect Certificates — Void

SEC. 2547. Any certificate of the location of a lode claim which shall not fully contain all the requirements named in the preceding section, together with such other description as shall identify the lode claim with reasonable certainty, shall be void.

Prerequisites to Filing Location Certificate

SEC. 2548. Before the filing of a location certificate in the office of the county clerk and ex-officio register of deeds, the discoverer of any lode, vein or fissure shall designate the location thereof as follows:

1. By sinking a shaft upon the discovery lode or fissure to the depth of ten feet from the lowest part of the rim of such shaft at the surface.
2. By posting at the point of discovery, on the surface, a plain sign or notice containing the name of the lode or claim, the name of the discoverer and locator, and the date of such discovery.
3. By marking the surface boundaries of the claim, which shall be marked by six substantial monuments of stone or posts, hewed or marked on the side or sides, which face is toward the claim, and sunk in the ground one at each side corner and one at the center of each side line, and when thus marking the boundaries of a claim, if any one or more of such posts or monuments of stone shall fall, by necessity, upon precipitous ground, when proper placing of it is impracticable or dangerous to life or limb, it shall be lawful to place any such post or monument of stone at the nearest point properly marked to designate its right place: *Provided*, That no right to such lode or claim or its possession or enjoyment shall be given to any person or persons unless such person or persons shall discover in said claim mineral bearing rock in place.

What Open Cut Equivalent to Discovery Shaft

SEC. 2549. Any open cut which shall cut the vein ten feet in length, and with face ten feet in height, or any cross-cut tunnel, or tunnel on the vein ten feet in length, which shall cut the vein ten feet below the surface, measured from the bottom of such tunnel, shall hold such lode the same as if a discovery shaft were sunk thereon.

Time Given Discoverer to Sink Shaft

SEC. 2550. The discoverer of any mineral lode or vein in this State shall have the period of sixty days from the date of discovering such lode or vein in which to sink a discovery shaft thereon.

Mineral Boundaries Defined

SEC. 2551. The locators of all mining locations heretofore made, or which shall hereafter be made, on any mineral vein, lode or ledge, situated on the public domain, their heirs and assigns, shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations, and of all veins, lodes and ledges throughout their entire depth, the top or apex of which lies inside of surface lines extended downward vertically, although such veins, lodes or ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side lines of such surface locations. But their right of possession to such outside parts of such veins or ledges shall be confined to such portions thereof as lie between vertical planes drawn downward, as above described, through the end lines of their locations so continued in their own direction that such planes will intersect such exterior parts of such veins or ledges. And nothing in this section shall authorize a locator or possessor of a vein or lode which extends in its downward course beyond the vertical lines of his claim to enter upon the surface of a claim owned or possessed by another.

Relocation of Abandoned Claims

SEC. 2552. Any abandoned lode, vein or strata claim may be relocated and such relocation shall be perfected by sinking a new discovery shaft and by fixing new boundaries in the same manner as provided for the location of a new claim; or the relocator may sink the original discovery shaft ten feet deeper than it was at the time of its abandonment, and erect new or adopt the old boundaries, renewing the posts or monuments of stone if removed or destroyed. In either event, a new location stake shall be fixed. The location certificate of an abandoned claim may state that the whole or any part of the new location is located as an abandoned claim.

Location Certificate

SEC. 2553. Hereafter the discoverer of any placer claim shall, within ninety days after the date of discovery, cause such claim to be recorded in the office of the county clerk and ex-officio register of deeds of the county within which such claim may exist, by filing therein a location certificate, which shall contain the following:

1. The name of the claim, designating it as a placer claim.
2. The name or names of the locator or locators thereof.
3. The date of location.

4. The number of feet or acres thus claimed.

5. A description of the claim by such designation of natural or fixed objects as shall identify the claim beyond question. Before filing such location certificate, the discoverer shall locate his claim. First, by securely fixing upon such claim a notice in plain painted, printed or written letters, containing the name of the claim, the name of the locator or locators, the date of the discovery and the number of feet or acres claimed; second, by designating the surface boundaries by substantial posts or stone monuments at each corner of the claim.

Assessment Work on Placer Claims

SEC. 2554. For every placer claim, assessment work, as hereinafter provided, shall be done during each and every calender year after the first day of January following the date of location. Such assessment work shall consist in manual labor, permanent improvements made on the claim in buildings, roads or ditches made for the benefit of working such claims, or after any manner, so long as the work done accrues to the improvement of the claim, or shows good faith and intention on the part of the owner or owners and their intention to hold possession of said claim.

Assessment Work — Amount of

SEC. 2555. On all placer claims heretofore or hereafter located in this State not less than one hundred dollars' worth of assessment work shall be performed during each calendar year from the first day of January after the date of location.

Assessment Work upon Contiguous Claims

SEC. 2556. When two or more placer mining claims lie contiguous, and are owned by the same person, persons, company or corporation, the yearly expenditure of labor and improvements required on each of such claims may be made upon any one of such contiguous claims if the owner or owners shall thus prefer.

SEC. 2557. (Repealed by Chapter 41, Session Laws of 1901.)

Effect of Failure to do Assessment Work

SEC. 2558. Upon failure of the owners to do or to have done the assessment work required within the time above stated, such claim or claims upon which such work has not been completed, shall thereafter be open to relocation on or after the first day of January of any year after such labor or improvements should have been done, in the same manner and on the same terms as if no location thereof had ever been made; provided, that the original locators, their heirs, assigns or legal representatives have not resumed work upon such claim or claims after failure and before any subsequent location has been made.

Affivadit of Assessment Work Done

SEC. 2559. Upon completion of the required assessment work for any mining claim, the owner or owners or agent of such owner or owners shall cause to be made, by some person cognizant of the facts, an affidavit setting forth that the required amount of work was done, which affidavit shall, within sixty days of the completion of the work, be filed for record, and shall there-

after be recorded in the office of the county clerk and ex-officio register of deeds of the county in which the said claim is located.

Patents to Placer Claims

SEC. 2560. When any person, persons or association, they and their grantors, have held and worked their placer claims in conformance with the laws of this State and the regulations of the mining district in which such claim exists, if such be organized, for five successive years after the first day of January succeeding the date of location, then such person, persons or association, they and their grantors, shall be entitled to proceed to obtain a patent for their claims from the United States without performing further work; but where such person, persons, or association, they or their grantors, desire to obtain a United States patent before the expiration of five years from the date hereinbefore mentioned, they shall be required to expend at least five hundred dollars' worth of work upon a placer claim.

Coal Mines Not Included in this Chapter

SEC. 2561. Nothing in this chapter shall apply to the working of coal mines.

SESSION LAWS 1907, CHAPTER 81

Development of Coal and Mineral Lands

AN ACT TO REPEAL CHAPTER 85, SESSION LAWS OF WYOMING, 1903, AND TO PROVIDE FOR THE PROSPECTING AND DEVELOPMENT OF COAL AND MINERAL LANDS BELONGING TO THE STATE OF WYOMING UNDER LEASES ISSUED BY THE STATE BOARDS OF LAND COMMISSIONERS.

Mineral Lands

SECTION 1. That Chapter 85 of the Session Laws of Wyoming, 1903, relating to the exploration and development of mineral lands belonging to the State of Wyoming be and the same hereby is repealed.

Authority — State Boards Land Commissioners

SEC. 2. The State Boards of Land Commissioners are hereby authorized to lease, upon a royalty basis, any state or school lands supposed to contain coal, oil or minerals, and to make and establish rules and regulations covering the conduct of development and mining operations to be carried on thereunder.

Rental Lease on Mineral Lands

SEC. 3. No mineral lease shall be issued for a less annual minimum payment than $16.00 per year, which payment shall be applied upon such royalty as may be provided for by the terms of the lease, which royalty shall be fixed according to the amount of mineral produced and shall in no case exceed ten per cent. of the gross output of mineral or oil produced from said lands under said lease. Whenever the lessee of such mineral lands shall have performed one hundred dollars' worth of work per year in the development of the mineral resources in the lands held under said lease, and shall have in all other respects complied with the terms thereof, he shall have the preferred right to renew the lease for further terms of five years each *Provided*, That

such lessee shall file with the Commissioner of Public Lands on or before December 31 of each year his sworn statement corroborated by two witnesses showing that he has performed the required amount of work in the development of claims upon the said land.

Rental Lease on Coal Lands

SEC. 4. No coal lease shall be issued for a rental payment of less than sixteen dollars per year, which payment shall be applied upon such royalty as may be fixed by the Board. The Board shall in all cases fix the royalty rate according to the amount of coal produced and said rate shall in no case exceed ten cents per ton. Coal leases shall be for a period of five years, and whenever the lessee of coal lands shall have, during the term of five years, performed two hundred dollars' worth of work per year in the development of a coal mine on the lands included in his lease, and shall have constructed suitable surface improvements, machinery and equipment for the purpose of carrying on the business of mining coal, such lessee shall have a preferred right to renew said lease for further terms of five years each, *Provided*, That the said lessee shall file with the commissioner of Public Lands on or before December 31, of each year, a sworn statement corroborated by two witnesses, showing that he has performed the required amount of work in the development of a mine or mines upon said lands.

Appraisal of Mineral Lands

SEC. 5. A State Board of Land Commissioners may, in its discretion, authorize the sale of all or any portion of lands leased for mineral purposes at the expiration of any lease made therefor, or any time with the consent of the lessee, in which case they shall cause the improvements thereon to be appraised in the same manner as improvements are appraised on lands leased for grazing purposes, and the purchaser of such mineral lands, if other than the owner of such improvements shall pay to the owner the appraised value of such improvements. The word "improvements" shall be construed to mean the value of surface improvements and the work performed on the property, and ninety per cent. of the estimated value of the mineral or oil contained in the land so sold. Ten per cent. of the estimated value shall be added to the minimum price of the land, ten dollars per acre, which total shall be the appraised value of the land. Payments for such land should be made in cash upon the day of sale, or thirty per cent. of the purchase price should be made in cash and the balance in such payments as may be fixed by the Board, not to exceed seven annual payments and arranged so that the State shall not lose by reason of the removal of the mineral from the ground so sold. *Provided*, That the provisions of this section shall not apply to the sale of coal lands.

Appraisal of Coal Lands

SEC. 6. A State Board of Land Commissioners may in its discretion authorize the sale of all or any portion of lands leased for coal mining purposes at the expiration of the lease held thereon, or at any time with the consent of the lessee. In the case of such sale the said Board shall cause the improvements thereon to be appraised and the purchaser of such lands, if other

than the owner of such improvements, shall pay to the owner the appraised value of the improvements. The word "improvements" shall be construed to mean the value of the surface improvements, machinery and other equipment and the value of the work performed in the development of said property for coal mining purposes. Payment for such lands shall be made in cash on the day of sale, or thirty per cent. may be paid in cash and the balance in such payments as may be fixed by the Board not to exceed seven annual payments, and arranged so that the State shall not lose by reason of the removal of the coal from the ground so sold by any default in such payment.

Coal and Mineral Distinct from Grazing Leases

SEC. 7. All coal or mineral lease made and executed pursuant to this act shall be separate and distinct from any lease of the grazing privileges thereon and may be made by said Board, and the regulations so made by said Board in connection therewith shall provide for the use of said lands for grazing purposes without interference by the lessee of coal or mineral privileges.

Lands Assigned — When

SEC. 8. No coal or mineral lease made under the provisions of this chapter shall be assignable or transferable except upon the written consent of the Board issuing the same, and the Board in each case, shall require the execution of a good and sufficient bond on the part of the lessee conditioned upon the payment of all moneys, rentals, and royalties provided for by the terms of said lease, and for the full compliance and observance of all rules and regulations established by said Board and all other terms which may be set forth in said lease.

Reports

SEC. 9. The State Geologist or any State Coal Mine Inspector shall, when requested by any State Board of Land Commissioners of Wyoming, visit and make a report upon any lands held under coal and mineral leases. Such report shall be made without any fee to the officer making same.

Repeal

SEC. 10. All acts and parts of acts in conflict with the provisions of this act are hereby repealed.

SEC. 11. This Act shall take effect and be in force from and after its passage. [Approved February 20, 1907.]

BIBLIOGRAPHY

In compiling the following bibliography no attempt has been made to present exhaustive lists, but only to give under each heading the titles of the best and latest books.[1]

GENERAL GEOLOGY

American

Chamberlin & Salisbury: Geology.

Vol. i. Processes and their Results (1905).

Vol. ii. } Earth History (1906).
Vol. iii. }

The latest and most complete treatise on American geology and a magnificent epitome of the results of the labors of three generations of American geologists by authors who are themselves profound students and investigators. It is reliable and comprises as full a treatment as is possible within three volumes of all the subjects properly belonging to general geology, but has special reference to American geological formations and history. The treatment of the topic of ore deposits, however, in the first volume is not in accordance with the latest conclusions of the majority of the authorities on this particular subject; but this does not affect the soundness of the author's interpretations of general geologic processes.

Dana, James D.: Manual of Geology (1895).

A standard and valuable treatise in one volume covering the entire field of American geology.

Le Conte, Joseph: Elements of Geology (1903).

A briefer work than either of the preceding, but very readable and clearly written. The brief section on ore deposits is perhaps the best in any book on general geology; and the work is good on Western stratigraphy.

Among the numerous text-books on geology of a popular or more elementary nature the following may be mentioned:

Scott, W. B.: Introduction to Geology (1902).

One of the best of the smaller books on geology.

Russell, I. C.: Volcanoes of North America (1897).

Russell, I. C.: Glaciers of North America (1897).

Two very interesting books written in a rather popular style, but containing sound scientific information.

[1] The names of the publishers are not given, for the books can usually be obtained at the same price and with less inconvenience from local book dealers. Where this cannot be done they may be procured from dealers in scientific books such as the publishers of this volume, Hill Pub. Co., New York City.

NICHOLSON, H. H.: Ancient Life History of the Earth (1877).

WALLACE, ALFRED: Geographical Distribution of Animals.

MACFARLANE, JAMES: Geological Railway Guide to America (1890).

Gives the geological formation of every railway station existing at date of its publication, and altitudes above sea-level. A very useful traveling companion.

English

GEIKIE, SIR ARCHIBALD: Text Book of Geology, 2 vols. (1903).

This great treatise on general geology with, of course, special attention to the geology of England and Europe, is an especially complete and valuable reference work, indispensable to all professional geologists. The latest edition (1903) has been completely revised and brought abreast of the latest advances of geology by the author, who is the most prominent living English geologist.

German

CREDNER: Elemente der Geologie (1897).

WALTHER: Einleitung in die Geologie (1893).

HISTORY OF GEOLOGY

GEIKIE, SIR ARCHIBALD: Founders of Geology (1897).

Reprint of a very interesting series of lectures delivered by the eminent English geologist at Johns Hopkins University.

MERRILL, GEORGE P.: Contributions to the History of American Geology (1906).

A very instructive and valuable series containing well-written sketches of the various periods of the development of American geology; the controversies on the various points that arose from time to time; the rise of the various State surveys; and the origin and development of the great United States Geological Survey. It also contains interesting and suggestive short biographies and portraits of all the workers in geology in America from the earliest to those of the present day.

ZITTEL, CARL: History of Geology and Paleontology (1901).

Historical sketch of the development of the science throughout the civilized world; of great value to any one interested in any department of geology.

LYELL, SIR CHARLES: The first chapters of his treatise on general geology contain a brief but interesting sketch of the growth of the science.

ORE DEPOSITS AND ECONOMIC GEOLOGY

American

KEMP, J. F.: Ore Deposits of the United States and Canada.

Vol. i. Metallic Deposits (1900).

Vol. ii. Non-Metallic Minerals (in preparation).

The most complete treatise on American ore deposits. It gives a full exposition of the latest views on the theoretical part of this very important and interesting subject, illustrated by American examples. This is followed by good descriptions of the ore deposits and geology of all the important metallic mining districts, coal fields, and other economic mineral deposits.

A particularly valuable feature is the full and impartial statement and

temperate treatment of conflicting views on those subjects of a theoretical nature concerning mineral deposits, on which there still exist differences of opinion between the authorities. Professor Kemp, however, has well-matured opinions of his own upon these topics and states the same. The value of the work as a digest and index to the literature of economic geology is mentioned under that head.[2]

MERRILL, GEORGE P.: Non-metallic Minerals (1904).

A valuable and up-to-date treatise on the non-metallic minerals of economic importance in the United States, exclusive of gems, building stones, and marbles. Especially good on the rarer minerals such as vanadates, uranates, monazite, tungstates, barates, etc.

FAWNS: Tin Deposits of the World (1905).

The only book on this subject.

MERRILL, GEORGE P.: Stones for Building and Decoration.

The American authority on this branch of economic geology.

MERRILL, GEORGE P.: Rocks, Rock Weathering and Soils (1904).

The most complete treatise on the subject of rocks as related to soil formation.

PÖSEPNÉY, LE CONTE, VAN HISE, VOGT, EMMONS, KEMP, LINDGREN, RICKARD, WEED *et al.*: Genesis of Ore Deposits (2d edition, 1902).

The origin of this volume was the notable contribution to the theory of ore deposits made by Prof. Franz Pösepnéy of Vienna, in his paper presented before the meeting of the American Institute of Mining Engineers in 1893 at the Worlds' Fair, Chicago, as mentioned on p. 72. This led to an extended discussion in the Institute upon this subject, by most of the American and some of the European authorities, which was collected and published in a separate volume, comprising all the theories and views of any importance held at that time. These papers aroused great interest, and stimulated the study and observation of ore deposits to a notable degree. They are worthy of perusal by all students of the subject.

SPURR, J. E.: Geology applied to Mining (1904).

A small book written in a very plain and simple style by one of the prominent workers in economic geology on the United States Geological Survey. It contains a summary of sound geological knowledge and views, as applied to the understanding of ore deposits, by an authority on the subject that cannot be found in an equal space elsewhere.

PARK, JAMES: Mining Geology (1906).

By a New Zealand author. Contains a good discussion of faulting, finding of lost veins, etc.

LAKES, ARTHUR: Geology of Western Ore Deposits (1905).

A valuable book by a writer intimately acquainted with his subject.

RIES, HEINRICH; Economic Geology of the United States (1905).

A rather brief but well-written and readable book.

WEED, W. H.: Copper Mines of the World (1907).

The latest and best book on this important metal, treating the subject from both the geological commercial standpoints, by an eminent scientific writer and geologist.

[2] See Page 556.

TARR, R. S.: Economic Geology of the United States (1900).

Another brief but interesting book, replaced in 1905 by the work of H. Ries, from the same publishers.

WEED, SPURR, LINDGREN, KEMP, VAN HISE *et al.*: Ore Deposits, a Discussion (1903).

This extremely interesting and instructive series of papers was originally presented before two meetings of the Geological Society of Washington in 1903. The discussion centered around two proposed theories of classification of ore deposits, presented by W. H. Weed and J. E. Spurr, and the theory of metallic ore deposition from magmatic waters involved therein. It was participated in by the leading representatives of opposing views on this subject. The work is a valuable résumé of the views of American authorities on this important theoretical topic.

The following two works, originally written in German, have been translated into English with important additions by the translators on American topics, so that they may be properly mentioned in connection with American books. The original German editions are cited under that heading.

PRIME'S VON COTTA: A Treatise on Ore Deposits (1869).

This was a pioneer work in English, and on this account, as well as owing to its intrinsic merits, was the most frequently quoted authority in American mining litigation during the last third of the past century, and is very valuable for reference owing to that fact. Unfortunately it is out of print, and second-hand copies are only occasionally obtainable.

BECK, RICHARD: The Nature of Ore Deposits, 2 vols. (1905).

A translation by W. H. Weed, of the United States Geological Survey, of an extended and detailed treatise on ore deposits by Dr. Richard Beck, Professor of geology and economic geology at the Freiberg Mining Academy. It is particularly interesting and valuable for the late descriptions of many European and other foreign ore deposits that are not available elsewhere to American students, and has been amplified by the translator for North America.

English

GEIKIE, JAMES: Structural and Field Geology (1905).

A well-written and instructive book on this practical subject with, of course, special reference to English and European geology. The author's views on the genesis of ore deposits have already been mentioned. Especially designed for those who use the science in their professional practice.

PHILLIPS, W. B. (Revised by Henry Louis): Ore Deposits (1896).

The best book on this topic by an English writer. Gives a very valuable review of the ore deposits of the world.

CURLE, J. H.: Gold Mines of the World (1903).

An interesting account of the principal gold mines of the world, giving especial attention to the financial aspect of the subject.

German

BECK, RICHARD: Lehre von der Erzelagerstätten, 2 vols. (1901).

See abstract of contents of translation above.

VON GRODDECK, ALBRECHT: Die Lehre von den Lagerstätten der Erze.

A condensed but extremely able work in which the ore-bodies of the world are grouped and discussed by types. This work is the forerunner of the best modern text-books.

PÖSEPNEY, FRANZ, editor: Archiv für praktische Geologie, 2 vols.

A series of papers, both general and local in scope, relating to ore deposits.

SANDBERGER, FRIDOLIN: Untersuchungen über Erzegange (1882).

A series of essays describing investigations in support of the theory of lateral secretion.

French

DE LAUNAY, L.: Formation des Gîtes Métalliferes.

A primer on ore deposits.

FUCHS & DE LAUNAY: Traité des Gîtes Minéraux et Métallifères (1893).

An encyclopedic work which contains quite rich local bibliographies on the mining districts of the world. All useful minerals except coal are treated.

DE LAUNAY, L.: Recherches Sources des thermo minerales (1899).

A treatise on hot springs.

MOREAU, G.: Étude Industrielle des Gîtes Métallifères (1894).

An excellent brief treatise on ore deposits and their explanation.

HISTORICAL ACCOUNTS OF THEORIES OF ORE DEPOSITS

KEMP, J. F.: A Brief Review of the Literature of Ore Deposits, *School of Mines Quarterly*, x, 54, 116, 326; xi, 359; xii, 219.

EMMONS, S. F.: Presidential Address before the Geological Society of America, Dec. 30, 1903, Bulletin Geological Society of America, vol. xv, p. 1.

PERIODICAL LITERATURE ON ECONOMIC GEOLOGY, ETC.

Economic Geology (West Bethlehem, Pa., and Urbana, Ill.).

Devoted to geology as applied to mining and allied industries. Its contributors include the prominent American authorities on economic geology. It is the only American periodical concerned with this branch of the science, and invaluable to every one interested in applied geology.

The American Geologist, formerly published at Minneapolis, Minn., has been merged with *Economic Geology*.

Journal of Geology (Chicago, Ill.).

Devoted to general geology, and contains many valuable contributions on all branches of the science.

Zeitschrift für Praktische Geologie (Berlin).

A valuable German periodical on economic geology.

Berg und Hüttenmänische Zeitung (Leipzig).

A weekly paper devoted to mining and economic geology.

Mineral Industry (New York).

One volume issued annually, contains complete and reliable statistics of the mineral productions of the preceding year, and many valuable articles on topics connected with economic geology and mining.

INDEXES, DIGESTS, BIBLIOGRAPHIES, ETC.

The most important series of indexes to American geological literature are those issued by the United States Geological survey as "Bulletins," as follows:

Bulletin No. 127: *Catalogue and Index to North American Geology* 1732–1891 Inclusive.

This invaluable index renders available for reference practically all of the literature on geology and related topics between the dates named. At the beginning is a "Classified Key to the Subject Entries" a brief examination of which will show how a given region or topic can be found in the index, and whatever books and articles there are on the same may be found. This index was continued in *Bulletins* 130, 135, 146, 156, 162, and 172, issued annually by the Survey, but the above numbers were all combined in

Bulletins Nos. 188 *and* 189: *Bibliography and Index of North American Geology Paleontology, Petrology, and Mineralogy,* 1892–1900 (Inclusive).

The plan is the same as the preceding, but more thorough on economic topics. The same series is continued in annual numbers as follows: *Bulletins* Nos. 203, 221, 240.

Bulletin No. 301: *Bibliography and Index of North American Geology, Paleontology, and Mineralogy,* 1901–5 (Inclusive). It is understood that these index bulletins will continue to be issued annually forming an indispensable means of access to geological literature.

Bulletin No. 177: *Catalogue and Index of the Publications of the United States Geological Survey,* 1880–1901.

This contains a complete descriptive catalogue of all the various publications of the United States Geological Survey from the date of its organization on its present basis to 1901, and a detailed and thorough subject index of all the subjects, regions, etc.; which affords ready access to the immense mass of exceedingly valuable publications issued by the Survey during the above period.

KEMP, J. F.: Ore Deposits of the United States and Canada:

Vol. i. Metallic Minerals.

Vol. ii. Non-Metallic Minerals.

These volumes contain very complete citations of the original articles and authorities on all the questions of economic geology, theories of ore deposits, definitions, etc., together with descriptions of the various metallic mining districts of the United States and Canada, and the coal fields and localities where other economic minerals are found, making them the best means of access to the literature of these subjects, except the U. S. G. S. indexes just described.

Descriptive Index of Current Engineering Literature (*vol. I of Engineering Index*)

Covers the period from 1884 to 1891 and contains references on geology, mining, and mining law.

Engineering Index, vol. II.

A continuance of the above, covering the period 1892–1895.

Engineering Index, vol. III.

Covers 1896–1900. From the close of 1900 this index has been continued in the monthly index found in the *Engineering Magazine.*

The *Transactions* of the American Institute of Mining Engineers contain many valuable original papers on all questions connected with ore deposits, mining districts, economic geology, mining law, etc.

These are made readily accessible by four separate index volumes as follows:

1. Covering vols. i to xv, 1871–1888.
2. Covering vols. xv to xx, 1888–1891
3. Covering vols. xxi to xxv, 1892–1897.
4. Covering vols xxvi to xxx, 1897–1902.

School of Mines Quarterly of Columbia University (1879 to date).

Vol. xx contains an index of contents from the beginning to 1899.

The Engineering and Mining Journal (1865 to date) contains numerous articles on mining districts, ore deposits, mining law, etc. Index in each semi-annual volume.

The Mining and Scientific Press, of San Francisco, contains many valuable articles, particularly on ore deposits and mining on the Pacific Coast. Index in each volume.

Other Sources of Information on Geology

State geological surveys

Beginning with Massachusetts in 1830, State geological surveys have been authorized in nearly all of the States at various times and continued for longer or shorter periods. In many of the States they are still in active operation. Excellent work was done by many of these surveys; and the reports issued have rendered much service to the scientific and industrial interests of the respective States. A list of the publications of the State surveys would occupy too much space to be given here, but any person interested in litigation or other matter involving geology should consult the reports of the geological survey of his State, in which he will often find the information he needs.

United States Geological Survey

Before the Civil War the National Government had done little or nothing in the way of geological surveys, but soon afterward it began to engage in this work. At first it was carried on by separate organizations assigned to particular territories as follows:

(1) The *Coast and Geodetic Survey;* engaged in mapping coast-line, but extended certain scientific investigations over other parts of the country.

(2) The *Geological Exploration of the Fortieth Parallel* (1867–1872), under the direction of Clarence King; surveyed a zone 105 miles wide along the line of the Pacific Railroad from meridian 104 deg. to 120 deg. west of Greenwich, comprising an area of 86,390 sq. miles. It has issued seven or eight volumes of reports.

(3) The *Geological and Geographical survey of the Territories* (1873–1878), under Dr. F. V. Hayden; surveyed areas in Colorado, New Mexico, Utah, Wyoming, and Idaho, comprising about 100,000 sq. miles. Issued a series of reports from 1868 to 1878.

(4) The *Geographical Survey West of the One-Hundredth Meridian* under Capt. George M. Wheeler, U. S. A.; surveyed various portions of Western territory and, as its name implies, was chiefly geographical, but devoted some attention to geology. It covered an area of about 359,000 sq. miles.

(5) The *Geographical and Geological Survey of the Rocky Mountain Region,*

under Major J. W. Powell; covered an area of about 67,000 sq. miles in Wyoming, Utah, and Arizona.

The carrying on of geological survey work by means of separate bodies finally resulted in considerable duplication and conflict between the different organizations, so that Congress requested the American Academy of Science to submit a plan for consolidating all of the geological work carried on by the National Government. This body submitted a report in 1867, and in March of the same year Congress passed a bill organizing the present *United States Geological Survey*. The first director was Mr. Clarence King, who held office until 1881. He was succeeded by Major J. W. Powell, 1881–1894, who was followed by Dr. Charles B. Walcott. On May 1st, 1907, Mr. Walcott resigned in order to accept the secretaryship of the Smithsonian Institution. His successor is Dr. George Otis Smith, appointed same date. The scope of the operation of the Survey has continually widened and it has done magnificent work, especially in Western regions where the greater part of public domain that comes under the operations of the United States mining laws is situated.

The publications of the Survey are too numerous to admit of enumeration here; but a complete list can be obtained on application to the Director, United States Geological Survey, Washington, D. C. The readiest way to secure the publications of the Survey is from the Superintendent of Documents, Washington, D. C., who will send a complete list, on application, with prices. The prices are nominal, being only cost of printing, etc.

Canada

The *Geological Survey of Canada* was established in 1842, under the directorship of William E. Logan, who was afterwards knighted. Sir William was succeeded by Alfred R. C. Selwyn; who was followed by George M. Dawson. Dr. Robert Bell became acting director upon the death of Dr. Dawson, and in 1906 Mr. A. P. Low was placed in charge.

Annual reports have been issued with chapters upon all parts of the Dominion. In 1900 a comprehensive index of the reports from 1863 to 1884 was published. The report for 1866 is a summary of what was known about the geology of the Dominion up to that time.

For information or special reports address the Director of the Geological Survey of Canada, Ottawa.

The province of Ontario also supports a provincial survey, under the Department of Mines at Toronto. Many valuable annual reports upon the resources of the province have been issued.

On the geology of New Brunswick and Nova Scotia there is a volume by the late Sir J. Wm. Dawson, entitled "Acadian Geology." It was first published in Edinburgh in 1855, but has passed through two later editions, the last having been issued in London in 1878.

The province of British Columbia maintains a provincial mineralogist, with an office in Victoria. Biennial reports are published, under the Minister of Mines of the Province.

Mexico

A national geological survey is supported under the name of the *Instituto Geologico Nacional*, with a fine building for headquarters at 5*a* del Ciprés

2728, Mexico, D. F., Mexico. The present director is Sr. José G. Aguilera. A series of *Boletinos* (bulletins) is in process of publication, of which two quarto volumes are now in circulation. In one of the earlier ones there is a review in the form of an itinerary of the mining districts.

MINERALOGY

DANA, J. D.: System of Mineralogy (6th ed., revised by E. S. Dana, 1892).

DANA, E. S.: Text-book of Mineralogy (1895).

These are the standard American authorities on Mineralogy, containing complete and detailed descriptions of all the minerals, both metallic and non-metallic. The section of the text-book on optical mineralogy is mentioned under that head.

MOSES & PARSONS: Mineralogy (1904).

A briefer but practical work, giving most attention to descriptions of minerals of economic importance and those related to the same. Contains one of the best schemes for the identification of minerals by the blowpipe tests for the chief elements occurring in the same. It has an excellent chapter on crystallography.

PENFIELD–BRUSH: Determinative Mineralogy and Blowpipe Analysis.

A work devoted wholly to methods and schemes for the identification of minerals. The best of its kind.

HINTZE, CARL: Handbuch der Mineralogie (being printed in parts, 1906).

MIERS, HENRY A.: Mineralogy (1902).

More elaborate and later than E. S. Dana's text-book, but covering almost the same ground.

CHESTER, A. B.: Dictionary of Names of Minerals, Including their History and Etymology (1896).

LUQUER, L. McI.: Minerals in Rock Sections (1905).

This is a small but practical work giving a brief statement of the principles, processes, and instruments of microscopic petrology and mineralogy as applied to the determination of the minerals of rocks. This is followed by descriptions of the optical character of the minerals found in rock sections and a key or table for their identification, that is valuable in practical work with the petrographic microscope.

IDDINGS, J. P.: Rock Minerals: Their Chemical and Physical Properties and their Determination in Thin Sections (1907).

This is the latest and most complete treatise on the subject in the English language.

German

ROSENBUSCH, H.: Microskopische Physiographie der Petrograpisch-Wichtigen Mineralen, vol. i (1892).

ROSENBUCH, H.: Microskopische Physiographie der Massigen Gesteine, vol. ii (1896).

IDDINGS–ROSENBUSCH: Microscopical Physiography of the Rock-making Minerals, 4th ed. (1900).

A translation and abridgment of Rosenbusch's "Mikroskopische Physiographic." It is especially valuable for its detailed description of the minerals

with respect to their physical properties and chemical character. Of most use to somewhat advanced students.

REINISCH: Petrographisches Praktikum, vol. i (1901).

A handy brief German text.

WEINSCHENK: Die Gesteinsbildenen Mineralien (1901).

A good brief German text.

CRYSTALLOGRAPHY

WILLIAMS: Elements of Crystallography (1890).

A good text devoted to this subject in its simpler phases.

DANA: Text-Book of Mineralogy.

Has introductory chapters on crystallography and a good elementary discussion of mathematical computations and optical character.

MOSES & PARSONS: Mineralogy.

Has an excellent condensed chapter on crystallography.

MOSES: The Character of Crystals (1902).

A good treatise on the theoretical and mathematical characteristics of crystals.

German

GROTH, P.: Physikalische Krystallographie (1905).

GOLDSCHMIDT, VICTOR: Krystallographische Winkeltabellen (1897).

LEIBISCH, THEODOR: Grundriss der Physikalischen Krystallographen (1896).

SCHROEDER VAN DER KOLK: Kurze Einleitung zur Mikroskopischen Krystallbestimmung (1898).

On the identification of thin fragments of minerals rather than thin sections of the same.

PETROLOGY

HARKER, ALFRED: Petrology for Students (1902). A brief manual treating rocks from the standpoints of both microscopic petrology and as seen by the unaided eye. By an English author; about the only small book available in the English language including microscopic petrology, and very good.

KEMP, J. F.: Handbook of Rocks (1904).

Contains a complete discussion and description of the igneous and metamorphic rocks as they are studied by the unaided eye without recourse to the microscope. Also a practical classification and nomenclature especially adapted to the needs of the mining engineer and geologist in field work. A particularly valuable feature for any one not acquainted with the technical literature of petrology is the glossary, which contains all the numerous and often conflicting names that have been applied to similar rocks. During the formative stage of the science of petrology, and particularly before the invention of the polarizing microscope and the use of chemical analysis of rocks, it frequently happened that different observers applied different names to the same rocks found in separate localities, or invented new names for trifling variations. Also the same name has been used in different senses at different periods in the history of science. Notable examples of this frequently encountered in reading mining reports, especially the older ones, and they are exceedingly confusing. This glossary defines all these names that have

been indiscriminately used, and explains and correlates the varying usage, so that by its aid the older petrographic and mining literature can be read understandingly.

CROSS:
IDDINGS:
PIRSSON:
WASHINGTON: } Quantitative Classification of Igneous Rocks (1903).

A wholly arbitrary but minute and logical classification of igneous rocks based on chemical composition and related mineral content. Useful to the advanced student and trained petrographer. Inapplicable to ordinary mining or field usage.

IDDINGS, JOSEPH PAXTON: Professional Paper No. 18, U. S. G. S.: Chemical Composition of Igneous Rocks Expressed by Means of Diagrams (1903).

With reference to rock classification on a quantitative chemico-mineralogical basis.

The differences between the various kind of igneous and crystalline rocks depends primarily on difference in their chemical compositions, for this determines the species of the rock-making minerals which were formed when the rock-mass solidified or crystallized from a molten or amorphous condition. The quantitative classification of Cross, Iddings, Pirsson, and Washington has been mentioned. (See above.)

These chemical and resulting mineralogical relationships, being based on the figures of the percentage composition obtained by chemical analyses of the rocks, are extremely difficult to grasp and correlate upon reading. Detailed and prolonged study is absolutely necessary to accomplish this to even a moderate degree. Various attempts have been made to overcome this by means of tables, charts, and diagrams. These, by presenting visually the analytical results in qauntitative diagrammatic form arranged in related groups, enable the mind, in spite of the overwhelming mass in detail, to grasp and apprehend relationships, and the resulting qualities and classification of the rocks.

Nearly all of the late works on geology and petrology employ some form of these aids; the latest edition of Kemp's "Handbook of Rocks" using both tables and diagrams. Examples of tabular schemes as applied to both igneous and sedimentary rocks are given in the Appendix.

The above Professional Paper contains a brief but very interesting sketch of the various schemes of this kind that have been proposed, and it then presents an ingenious method of representing the various classes of the said author's "syndicate" quantitative classification by means of little colored diagrams arranged on large sheets.

These at first sight give an impression of multitudinous fleets of gayly colored yachts sailing serenely on a cross-hatched sea. But an examination of the diagrams show that they convey, by moderate study, an understanding of the quantitative system of rock classification that otherwise could be obtained only by enormous labor.

WASHINGTON, HENRY STEPHENS: Chemical Analysis of Igneous Rocks from 1884–1900, with a Critical Discussion of the Character and Use of Analysis: Professional Paper No. 14, U. S. G. S.

An interesting discussion on this branch of petrology by an authority on the subject. It contains a compilation of an immense number of rock analyses which are not available for consultation in any other form.

German

REINISCH: Petrographisches Praktikum, ii (1904).

A good brief German text-book.

WEINSCHENK: Grundzüge der Gesteinskunde, i (1902).

A good brief text.

ROSENBUSCH: Elemente der Gesteinslehre (1898).

One of the best text-books on the subject.

ROSENBUSCH: Microskopische Physiographic der Messigen Gesteine (1896).

A more extended discussion.

ZIRKEL: Lehrbuch der Petrographie, i, ii, iii (1893–1894).

The most elaborate and complete discussion of the subject on its descriptive side in any language.

STRATIGRAPHY AND PALEONTOLOGY

American

GRABAU, A. W. & SHIMER, H. W.: North American Index Fossils (1907).

Brief descriptions and illustrations of fossils that indicate the geological horizon of the formations in which they are found. By means of keys and schemes for identification and the illustrations, fossils can be identified in the field, and thereby the position of the formation in which they are found can be determined in the geological time scale. This is often a matter of great practical importance. It is the only work of the kind in the English language and invaluable. (Parts i and ii published; part iii in press.)

GRABAU, A. W.: Principles of Stratigraphy.

Contains a full discussion of the principles on which modern stratigraphy is based and of the geological formations of North America, with numerous examples from the geology of Europe and the other continents, interpreted in the light of these principles and generalizations. (To appear shortly.)

English

MARR, J. S.: Principles of Stratigraphal Geology (1898).

A small book with examples chiefly from British geology.

French

DE LAPPARENT, A.: Traité de Geologie, 4th ed. (1900).

The best modern text-book in French on geology and stratigraphy.

PALEONTOLOGY, PURE SCIENCE

NICHOLSON & LYDECKER: Manual of Paleontology, 2 vols., 3d. ed. (1889).

An excellent treatise with numerous illustrations. Vol. i deals with invertebrates; vol. ii with vertebrates.

WOODS, HENRY: Elementary Paleontology, 3d. ed. (1902).

A small but good elementary work by a British author.

ZITTEL, CARL: Text-book of Paleontology, 2 vols (1900).

This is a translation from the German by Dr. C. R. Eastman, with additions by the translator and by numerous American specialists, each section being revised by a specialist in that part of the science. It is perhaps the best systematic treatise in the English language on the pure science; but it deals only with general and higher divisions.

French

FELIX, BERNARD: Elemente de Paleontologie (1895).

The best modern work on paleontology in the French language.

German

VON ZITTEL, CARL A.: Grundzuge der Paleontologie Vol. i, 2d ed. (1903).

Described under the notice of Eastman's translation into English.

STEINMAN: Einführung in die Paleontologie (1904).

A book of the general scope of Zittel, though somewhat different treatment. It includes vertebrates and plants.

ROMER, FRECH *et al.*: Lethæa Geognostica. (In process of publication.) Vols. i and ii complete (through Paleozoic); vols. iii and iv issued in part (Mesozoic and Cenozoic).

The most important and comprehensive of all works in all languages on the stratigraphy and paleontology of the entire earth.

KAYSER: Geologische Formationskunde, 2d ed. (1902).

An excellent text-book, with illustrations from all countries. An English translation of the first edition is known by the title of "Comparative Geology."

KOKEN: Leitfossilen (1896).

On index fossils with special reference to European geology. Contains numerous brief descriptions (with few illustrations) of characteristic fossils.

NEUMAYR, M.: Erdgeschicte (1895).

A general treatise on the geology of the globe with numerous excellent illustrations.

PENCK, ALBRECHT: Morphologie der Erdoberflache, 2 vols. (1894).

One of the most important treatises on physiographic geology.

MINING

SPURR, J. E.: Geology Applied to Mining (1904).

A valuable elementary treatise on mining geology.

STRETCH, R. H.: Prospecting, Locating, and Valuing Mines (1903).

An elementary treatise, written for prospectors, investors, and others interested in mining matters, rather than for the expert. Includes elementary chapters on mineralogy, geology, and mineral deposits.

LAKES, ARTHUR: Prospecting for Gold and Silver in North America.

An elementary text-book of value to prospectors, investors, and others interested in mining.

LOCK, C. G.: Economic Mining (1895).

This book reviews in separate chapters the distribution of the different ores and non-metallic minerals, and the conditions under which each is produced in different parts of the world.

MURPHY, JOHN G.: Practical Mining (1890).

This is a small book containing valuable suggestions regarding the organization and conduct of mining as a business.

Mineral Industry (Annual), issued by the *Engineering and Mining Journal*, 1892 to date (14 vols.).

This is a series of statistical volumes reviewing mining conditions for each mineral and containing a number of valuable monographs on mining progress from year to year.

IHLSING, MAGNUS C.: A Manual of Mining (1905).

An elementary treatise on mining, devoting especial attention to mine plant and mine machinery.

FOSTER, C. LE NEVE: A Text-Book of Ore and Stone Mining (1900).

An advanced manual on metal mining by the late professor of mining in the Royal School of Mines, London, an engineer of wide experience and more than average ability. Best book on the subject in the English language.

HUGHES, H. W.: A Text-Book of Coal Mining (1901).

An advanced manual on coal mining, which supplements admirably the work of Foster above mentioned.

FOSTER, C. LE NEVE: The Elements of Mining and Quarrying, London (1903).

An elementary text-book by the author of "Ore and Stone Mining" above mentioned.

California Mines and Minerals (The California Miners Association, 1899).

This book contains a series of descriptive articles prepared by California mining men for the use of members of the American Institute of Mining Engineers, on the occasion of their visit to California in 1898.

UNDERHILL: Mineral Land Surveying, Denver (1906).

A treatise on the surveying of mining claims in the United States public lands.

CURLE, J. H.: The Gold Mines of the World (1902).

The above is a reprint of a series of articles which appeared in the London *Economist*. In the last edition these articles have been revised and brought up to date.

WARWICK, A. W.: Ore in Sight (Denver, Colo., 1903).

RICKARD, T. A., and others: Sampling and Estimation of Ore in a Mine (1904).

RICKARD, T. A., and others: Economics of Mining (*Engineerng and Mining Journal*, 1905).

These three books consist for the most part of reprints of articles which have appeared in the *Mining Reporter* and in the *Engineering and Mining Journal* during the past two years, and contain much valuable material.

BOWIE, A. J.: A Practical Treatise on Hydraulic Mining in California (1898).

A complete and valuable monograph on this method of mining gold-bearing gravels.

PURINGTON, C. W.: Gravel and Placer Mining in Alaska (1905).

A valuable report describing modern methods of working placer deposits, covering open cut and drift mining, hydraulic mining and dredging.

RICHARDS, R. H.: Ore Dressing, two vols. (1905).

The standard treatise on concentration and stamp milling.

LOUIS: Handbook of Gold Milling (1899).

This is one of the most satisfactory text-books on the stamp milling of gold ores.

PRESTON: California Gold Mill Practices (1895).

An elementary and descriptive text-book.

RICKARD, T. A.: Stamp Milling of Gold Ores (1898).

A series of critical and descriptive essays on variations in stamp milling in different parts of the world written from the standpoint of an expert.

ADAMS: Hints on Amalgamation and the Care of Gold Mills (1899).

A small book containing many valuable suggestions on stamp milling written by an engineer for the benefit of experts.

METALLURGY

SEXTON, A. HUMBOLDT: Fuel and Refractory Materials (1897).

This is the best general book on fuels, although it is English and is considerably out of date.

FULTON, JOHN: Coke; International Text-book Co. (1905).

This is the best book on the manufacture of coke either in beehive or by-product ovens.

PETERS, EDWARD D.: Principles of Copper Smelting (1907).

Supplementing and bringing down to date the same authors, Modern American Methods of Copper Smelting (1895).

The best books on copper smelting.

HIXON, HIRAM W.: Notes on Lead and Copper Smelting (1897).

RICKARD, T. A. editor: Pyritic Smelting (1905).

A collection of papers by various authorities giving the latest information on this recent development in metallurgy.

INGALLS, WALTER R., editor: Lead Smelting and Refining (1907).

A practical series giving the latest developments in lead smelting.

HOFMAN, H. O.: The Metallurgy of Lead (1901).

This is the best book on lead.

ROSE, T. KIRKE: The Metallurgy of Gold (1896). 2d ed. Edited by Prof. W. C. Roberts-Austen.

This is the best book on gold.

COLLINS, HENRY F: The Metallurgy of Lead and Silver (1900). Part II — Silver. Edited by Prof. W. C. Roberts-Austen.

This is the best book on silver.

INGALLS, WALTER R.: The Metallurgy of Zinc and Cadmium (1904).

This is the best book on zinc.

RICHARDS, JOSEPH W.: Aluminum 3d ed. (1896).

This is the best book on aluminum.

JULIAN & SMART: The Cyaniding of Gold and Silver Ores.

This is the best book on the cyanide process.

SCHNABEL, CARL: Handbook of Metallurgy, vol. i, 2d ed. (1905).

This is the best general work on metallurgy and the best treatise on the metallurgy of mercury.

BALE, GEORGE R.: Modern Iron Foundry Practice: Part i (1902); Part ii (1906).

This is the best book on foundry practice.

BELL, SIR I. LOWTHIAN: Principles of the Manufacture of Iron and Steel (1884).

This book is a classic and, like "Chemical Phenomena of Iron Smelting," by the same author, which is now out of print and very rare, will never be replaced by a newer book in the metallurgist's library, even though it is now somewhat out of date.

CAMPBELL, H. H.: The Manufacture and Properties of Iron and Steel, 2d ed. (1904).

This is a first-class book.

HARBORD, F. W.: The Metallurgy of Steel. With a Section on Mechanical Treatment by F. W. Hall (1905).

This exhaustive treatise on the manufacture of steel is the best of all similar recent publications. It abounds with valuable information on furnaces and operations, on the effect of different impurities of steel, and on the shaping of steel by mechanical work, on which subject it is practically the only complete treatise.

HOWE, H. M.: Iron, Steel and Other Alloys (1903).

This is the first and best complete treatise on the modern theory of the constituents of steel.

HOWE, H. M.: The Manufacture of Steel. Vol. i, 4th ed. (1890).

This book is still recognized throughout the world as the standard authority on the metallurgy of steel; and every book on the subject written since 1890 builds upon it as the source of highest reference.

MELLOR, J. W.: The Crystallization of Iron and Steel. An Introduction to the Study of Metallography (1905).

This little book is an excellent popular account of the constitution and nature of cast iron and steel, including such subjects as the constituents of iron and steel, the theory of the correct and incorrect methods of annealing, hardening, and tempering steel and the microscopic examination.

MACFARLANE, W.: The Principles and Practice of Iron and Steel Manufacture (1906).

This is the best, because most recent, of the elementary text-books on iron and steel.

SWANK, JAMES H.: History of the Manufacture of Iron in All Ages, and Particularly in the United States for Three Hundred Years, from 1585 to 1885, 2d ed. (1894).

This is the best historical account of iron and steel manufacture.

SWANK, JAMES M.: Directory of the Iron and Steel Works in United States and Canada. Embracing a full description of the Blast Furnaces, Rolling Mills, Steel Works, Tinplate and Terne Plate Works, and Forges and Bloomaries in the United States; also classified lists of the Wire Rod Mills, the Structural Mills, Plate Sheet, and Skelp Mills, Black Plate Mills, Rail Mills, Steel Casting Works, Bessemer Steel Works, Open Hearth Steel Works and Crucible Steel Works. 16th ed. (1904).

This is a very complete directory and description of the American plants for producing all kinds of finished iron and steel.

TURNER, THOMAS: The Metallurgy of Iron and Steel. Edited by Prof. W. C. Roberts-Austen, vol. i — The Metallurgy of Iron (1895).

This is the best book on the blast furnace.

WOODWORTH, JOSEPH V.: Hardening, Tempering, Annealing, and Forging of Steel. A Treatise on the Practical Treatment and working of High and Low Grade Steel (1903).

It is almost impossible to-day to say which is the best book on the practices mentioned in the title of this book.

BROUGH, BENNETT H., editor: The Journal of the Iron and Steel Institute. Published by the Institute, London.

This periodical appears twice each year. It contains not only a great many original articles of importance, but also abstracts of a large part of the literature of iron and steel during the year. Thus almost every metallurgist in commencing the study of a new subject uses this periodical as a bibliography and to obtain the latest information which has not yet found its way into reference and text-books.

LE CHATELIER, HENRI, editor: Revue de Metallurgie (Monthly). Paris.

This periodical is the most valuable work for recent literature on the constitution of iron and steel and their alloys. It also contains bibliographies of other works on these subjects.

MISCELLANEOUS

The following publications on mining and metallurgical topics are issued by the International Library of Technology. While they are rather elementary as to subject-matter and style, still they contain much valuable matter that cannot be found elsewhere:

Gases Met with in Mines (1900).
Mine Ventilation (1897).
Economic Geology of Coal (1895).
Prospecting for Coal and Locating Openings (1895).
Shafts, Slopes, and Drifts (1897).
Methods of Working Coal Mines (1897).
Electric Haulage and Hoisting (1900).
Electric Pumping, Signaling and Lighting (1900).
Electric Coal-Cutting Machinery (1900).
Prospecting (1899).
Placer and Hydraulic Mining (1899).
Sampling Ores (1902).
Roasting and Calcining Ore (1902).
The Cyanide Process (1902).
Hyposulphite Lixiviation (1902).
The Chlorination Process (1902).
Copper Smelting and Refining (1902).
Zinc Smelting and Refining (1902).
Electrometallurgy (1902).

STEVENS, HORACE J.: Handbook of Copper (1907).

This valuable publication includes chapters on the ores, metallurgy, and mining of copper, but the larger part of the book is taken up by a complete list of the copper mines and copper-mining companies of the world, giving

particulars of their corporate organization and financial affairs, and also the physical condition of the properties and production. A new edition is issued each year, keeping the work up to date.

SKINNER, WALTER R.: The Mining Manual.

This is a yearly publication giving particulars as to capital, property, officers, etc., of mines throughout the world owned in England. It is divided into three sections: Australian, African and miscellaneous, the latter giving particulars as to English owned mines in the United States, Canada, Mexico and South America. A very useful and reliable compilation.

A similar publication for the United States was formerly issued by Poole Bros., Chicago, Ill., but unfortunately has been discontinued.

ANALYTICAL CHEMISTRY

There are many excellent treatises on analytical chemistry and its subdivisions of assaying, etc. As improved methods of analysis are being constantly worked out, the latest books or latest editions are always preferable. The names of some of the latest on the different branches follow:

BLAIR: Chemical Analysis of Iron, 3d ed. (1896).
FRESENIUS: Qualitative Analysis: Translated by Wells (1897).
FRESENIUS: Quantitative Analysis. Translated by Cohn, 2 vols. (1903).
CROOKS: Select Methods of Chemical Analysis (1905).
TREADWELL: i. Qualitative Analysis (1903).
ii. Qualitative Analysis (1904).
Both translated by Hall.
SUTTON: Volumetric Analysis, 9th ed. (1904).
CAIRNES: Manual of Quantitative Analysis for Students, 3d ed. (1896).
OLSEN: Text-book of Quantitative Chemical Analysis (1904).

ASSAYING

ARGALL, PHILIP H.: Western Mill and Smelter Methods of Analysis (1905).
AARON: Assaying (1900).
MILLER, A. S.: Manual of Assaying.

The fire assay of gold, silver and lead, including amalgamation and chlorination tests.

RICKETTS and MILLER: Notes on Assaying (1900).
PHILLIPS: Gold Assaying (1904).
FURMAN; Manual of Practical Assaying (1893).
LODGE: Notes on Assaying (1906).

BLOWPIPE ASSAYING

PLATTNER: Manual of Qualitative and Quantitative Analysis with the Blowpipe, translated by Cornwell (1902).
FLETCHER: Practical Instructions in Quantitative Assaying with the Blow pipe (1894).

MINING, METALLURGY, ETC., PERIODICALS CONCERNED WITH:

The Engineering and Mining Journal, New York.
The Mining and Scientific Press, San Francisco.

Mines and Minerals, Scranton.
The Colliery Guardian, London.
Engineering News, New York.
The Iron Age, New York.
School of Mines Quarterly, New York.
Mining Record, New York.
Iron and Coal Trade Review, London.
Mining World, London.
Engineering Magazine, New York and London.
Mining Reporter, Denver.
Ores and Metals, Denver.
Canadian Mining Review, Ottawa, succeeded, 1907, by:
Canadian Mining Journal, Ottawa.
British Columbia Mining Record, Victoria.
Mining, Spokane.
Australian Mining Standard, Sydney.
New Zealand Mines Record, Wellington.
Mining Journal, London.
Mining World, Chicago.
Daily Mining Record, Denver.

MINING LAW

United States

BARRINGER and ADAMS: Law of Mines and Mining in the United States (1897).
CLARK, HILLMAN & CONSAUL: Mineral Law Digest (1897).
EMERY: Miner's Manual (1906).
LINDLEY: Mining Law, 2 vols. (1903).
MORRISON: Mining Rights 12th ed. (1905).
MORRISON: Mining Reports, 21 vols.
SNYDER: Mines and Mining, 2 vols. (1902).
WHITE: Mines and Mining Remedies (1903).
WHITE: Personal Injuries in Mines (1905).

LAW OF PETROLEUM AND NATURAL GAS

BRYAN: Law of Petroleum and Natural Gas (1898).
DONAHUE: Petroleum and Natural and Manufactured Gas (1902).
THORNTON: The Law Relating to Oil and Gas (1903).

English

BAINBRIDGE: Law of Mines and Minerals, 5th ed. (1900).
COCKBURN: Law of Coal, Coal Mining and the Coal Trade; and the holding, working and trading with minerals generally (1902).
MCSWINNEY: Law of Mines, Quarries and Minerals (1897).

Canadian

MCPHERSON and CLARK: Law of Mines in Canada; a comprehensive and exhaustive annotation of the Mining Acts of the various provinces that comprise the Dominion of Canada (1898).

MARTIN: Reports of the Mining Cases decided by the Courts of British Columbia and Courts of Appeal therefrom to Feb. 9, 1903, with an appendix giving the mining statutes from 1853 to 1902, 1 vol. (1903).

Australia and New Zealand

ARMSTRONG: Law of Mining in Australia and New Zealand, 2d ed. (1901).

Spanish and Mexican

CHISM: Encyclopedia of Mexican Mining Law (1901).
ROCKWELL: Spanish and Mexican Law (1871).

CLASSIFICATION OF ROCKS AND GEOLOGICAL FORMATIONS

THE earth is made up of rocks, the term including not only the hard, solid matter of the earth but also all loose substances — sand, gravel, clay, soil, etc. Rocks are composed of mineral or aggregates of minerals, and have been classified in many different ways. The following is one of the most useful of the primary classifications:

1. Igneous.
2. Aqueous and Eolian (Sedimentary).
3. Metamorphic.

The igneous rocks are probably the most important group in relation to metal mining and are classified according to the minerals of which they are composed and their texture. The latter depends chiefly on the size, relative and absolute, of the crystals which go to make up the rock. One of the best and most practical classifications of the igneous rocks I have seen is given in tabular form herewith.[1]

The table is a genuine *multum in parvo* of petrography, giving the names, the mineralogical and chemical compositions and texture of practically all the igneous rocks, both common and rare, met with in scientific literature.

Igneous Rocks — Explanation of Table

Igneous rocks are those which have consolidated from a fused or semi-fused condition. They may be best classified by means of their mineralogical composition, and partly by their mode of occurrence. By the latter method they fall into two great classes: the *extrusives*, or those thrown out upon the surface by volcanic action, etc., and the *intrusives*, or those thrust up into the earth's crust but which do not reach the surface except by sub-

[1] This and the accompanying explanation of the table are kindly furnished by Dr. F. J. Pack, professor of geology, Brigham Young College, Logan, Utah.

sequent erosion. Among the forms thus produced are the so-called batholiths, laccoliths, bosses, sheets, dikes, etc.

The textures of the two classes differ greatly. As a rule the extrusive rocks are fine-grained or felsitic, while the intrusive rocks are coarse-grained, as shown in the granites and porphyries.[2]

It is surprising to note the small number of minerals present in igneous rocks. Half a score will include all the more common ones, and a score almost all of them. Among the ones commonly present are the following: quartz, the feldspars, the micas, hornblende, augite, and the iron ores. The feldspars are divided into the orthoclase and plagioclase series. Some one of the feldspars is present in practically every rock. It is convenient, therefore, that the genetic classification be based upon the feldspar content.

In the third column of the accompanying table it will be noted that the chief feldspar of the first six groups is orthoclase, while of the remaining six it is plagioclase. The other essential minerals of each group are indicated in the same column. It may be seen, therefore, that a rhyolite is composed of orthoclase, quartz, and one or more of the following: biotite, hornblende, augite. Furthermore, a dacite is composed of plagioclase, quartz, and one or more of the following: biotite, hornblende, augite. The only difference between a rhyolite and a dacite is that the feldspar in the former is orthoclase, while in the latter it is plagioclase.

In addition to the essential minerals a number of accessory ones not infrequently occur. A list of such is set opposite each group.

At the rhyolite-granite end of the series the light-colored

[2] The term "porphyry" is one so often used, especially among practical miners, that a word of explanation of the name may be useful. It was originally applied to any rock consisting of large crystals imbedded in a fine-grained, or felsitic, ground mass. When rocks were more carefully studied and accurately classified by the aid of the petrographic microscope, it was found that the rocks called porphyry were of varying mineralogical composition corresponding to the classes of the coarsely crystalline (holocrystalline) rocks such as the granites, gabbros, etc. Consequently the word "porphyritic" has come to be used by scientific petrographers as the name of a *texture* — made up of large well-formed crystals of any rock mineral imbedded in a fine-grained ground mass, which usually consists of crystals too small to be distinguished by the naked eye. By prefixing the name of the class of holocrystalline rocks of corresponding mineralogical composition, granite-porphyry, diorite-porphyry etc., accurate names are furnished for the rocks. For field work, however, the term "porphyry" is allowable and is very useful as a provisional name until the nature of the rock is more accurately determined by the microscope, but it is not used scientifically for any rock of definite mineralogical composition.

Another textural term is "granitoid" which is applied to any rock composed of crystals, all of which are large enough to be distinguished by the naked eye. The term "granite," however, is also used by scientific petrographers as the name of a rock of definite mineralogical composition, as shown in the table.

minerals are in excess, and, therefore, these rocks are usually light colored. At the basalt-gabbro end the dark-colored minerals predominate; these rocks are, therefore, much darker than the ones at the opposite end. This fact is noted in the fifth column.

It has already been stated that the textures of the various igneous rocks differ greatly. This is brought about not by mineralogical composition, but by the conditions under which cooling occurred. Two rocks such as granite and rhyolite differ but little in composition, but greatly in general appearance. The rhyolite is an extrusive rock; the granite an intrusive. The former was cooled quickly; the latter, slowly. The texture of the various classes is indicated under the proper heading.

From a great many analyses of igneous rocks the data under the head of "Chemical Composition" have been selected. The maximum, minimum, and average range of each of the compounds present is given. For example, in analyzing rhyolites the maximum amount of silica obtained from any specimen was 83.59 per cent., the minimum 63.63 per cent., and in most specimens it ranged from 65 per cent. to 75 per cent.

Under the heading "Related Groups" the connection between the various classes may be easily traced. The signs — and + indicate respectively the absence or presence of the mineral following in connection with the type rock named in column 2. The braces include all the added or subtracted minerals necessary to make up the new rock named after the = sign. Where one mineral stands alone with a sign before it, this means that only this mineral is added or subtracted. If from a given rock a mineral is introduced or taken out, the resultant rock belongs to a different class. Example: If from a rhyolite we take the quartz, the rock is then a trachyte. Or if to a trachyte we add quartz, we get a rhyolite. This means that the only difference between a rhyolite and a trachyte is that the former contains quartz and the latter does not. Again, if from a rhyolite we take the orthoclase and add plagioclase, the result is a dacite. Or if from a dacite we take the plagioclase and add orthoclase, the result is rhyolite. The difference between these two rocks is, therefore, that the rhyolite contains orthoclase and the dacite plagioclase. Still further, if quartz be taken from a granite, the result is a syenite. Or if quartz be added to a syenite, the result is a granite,

The relation between any of the various groups may be easily traced by means of the data in this column.

At the extreme right of the table a number of varieties and intermediate groups are arranged, and their relation to the chief subdivisions indicated. These are of much less frequent occurrence in nature than the great classes named in the second column.

Aqueous and Eolian Rocks

The aqueous and eolian rocks are those which owe their present form to the action of water and wind respectively, being composed of broken-down igneous or previous sedimentary rocks, or of corals, shells and other organic remains, of precipitates from solution, etc. Those of aqueous origin are commonly called sedimentary rocks and are most frequently subdivided according to composition, as limestones, sandstones, shales, etc.

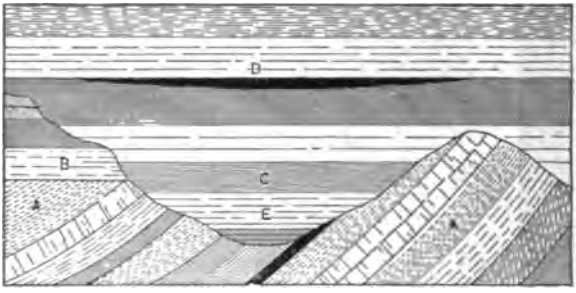

Fig. 101. — Illustrating terms used in describing the positions of rocks *A*, Conformable series; *B*, unconformable with *A*; *C*, *D*, *E*, unconformable with *A* and *B*, but conformable among themselves.
From Stretch; Prospecting, Locating and Valuing Mines.

The sedimentary rocks have been deposited throughout all the ages since air and water, wind and wave have been acting on the solid rock surface of the earth, being laid down in a succession of beds. One of the great achievements of geology is that it has worked out the succession of the sedimentary beds from inconceivably remote times. It has ascertained that this succession is, in a general way, the same all over the earth, and the different geological ages have received names that are of general application.

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and eras. Each of the latter are subdivided into formations that are usually of one kind of rock, but these subdivisions differ widely in the different continents and in the different regions of the same continent. At the same period of geologic time the deposition of limestone may have been in progress at one place; of sandstone or shale at another, etc. Consequently, it would be impossible to give here all of the numerous formations found in the United States.[3]

GENERAL TABLE OF GEOLOGIC TIME DIVISIONS[4]

Cenozoic	Present. Pleistocene. Pliocene. Miocene. Oligicene. Eocene.
Mesozoic	Transition (Arapahoe and Denver). Cretaceous (upper). Comanche (lower Cretaceous). Jurassic. Triassic.
Paleozoic	Permian. Pennsylvanian (upper Carboniferous). Mississippian (lower Carboniferous). Devonian. Silurian. Ordivician. Cambrian.
Pre-Cambrian	Keweenawan (Nipignon). *Unconformity.* Huronian: Upper (Animikie); *Unconformity.*; Middle; *Unconformity.*; Lower. *Unconformity.* Keewatin. *Eruptive Contact.* Laurentian.

METAMORPHIC ROCKS

Both of the preceding classes of rocks are subject to alteration and change of mineralogical composition and texture, etc., by the action of heat, water, solutions, pressure, and other agents.

[3] See Chamberlin & Salisbury's Geology, Vol. III, Appendix, which gives numerous sections from all parts of the United States.

[4] From Chamberlin & Salisbury, vol. 2, p. 160. The formations below the Cambrian are those proposed by the joint committee of the United States and Canadian Geological Surveys as given on p. 161 of Chamberlin & Salisbury's work, instead of the corresponding subdivisions on p. 160. It is probable that the method of subdivision and names proposed by said joint committee will be more generally used hereafter.

Thus limestone is altered to marble; deposits of vegetable matter to peat, lignite, bituminous or anthracite coal; clay and shale to slate; sandstone to schist and quartzite; granite and other crystalline rocks to gneiss, etc. No complete classification of the metamorphic rocks has been proposed and, indeed, this is hardly possible on account of the diverse source of the original material of the rocks and the varying agents that may have produced the alteration in the rocks. Consult Kemp's Handbook and other works on petrology. In addition to the books on petrology described in the Bibliography, p. 560, the books of Luquer and Iddings, mentioned under the title, mineralogy, p. 559, will be found useful on the metamorphic and igneous rocks. There is no separate work on the sedimentary rocks. They are treated in the works on general geology and also in Kemp's Handbook. The most thorough treatment of their classification, etc., is an article by Dr. A. W. Grabau in the *American Geologist*, April, 1904, p. 228. They are also given full consideration in Dr. Grabau's Principles of Stratigraphy, described on p. 562.

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In consulting the index on any subject which may be a subject of State legislation, look under the name of the State concerned as well as in the general index: for the provisions of the State mining statutes indexed under the name of each mining State are not repeated in the general index.

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